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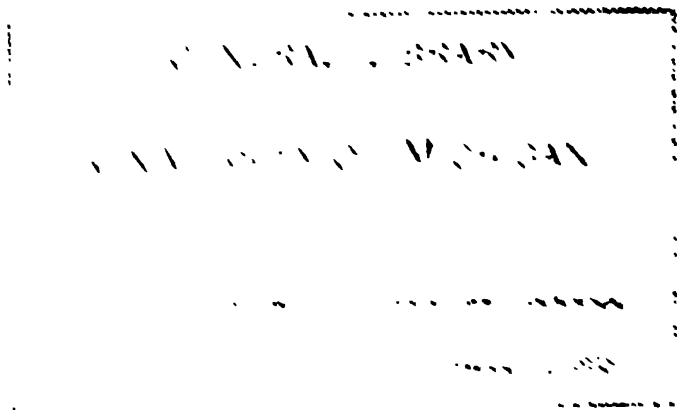
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THE

4-11-11

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC

FOR THE YEAR

1 8 9 6

FIRST EDITION

PUBLISHED IN COMPLIANCE WITH A JOINT RESOLUTION OF THE FORTY-SIXTH CONGRESS

WASHINGTON:
BUREAU OF EQUIPMENT.
1893.

JOINT RESOLUTION

FOR PRINTING THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be printed annually at the Government Printing Office fifteen hundred copies of the American Ephemeris and Nautical Almanac and of the papers supplementary thereto, of which one hundred shall be for the use of the Senate, four hundred for the House of Representatives, and one thousand for the public service, to be distributed by the Navy Department.

Sec. 2. That additional copies of the Ephemeris and of the Nautical Almanac extracted therefrom may be ordered by the Secretary of the Navy for sale: Provided, That all moneys received from such sale shall be deposited in the Treasury to the credit of the appropriation for public printing.

Approved, February 11, 1880.

PREFACE.

THE arrangement of *The American Ephemeris* adopted in the volume for the year 1882, and explained in the Appendix to that volume, has been continued without radical change to the present time.

The additions then made comprise more complete data for eclipses of the sun, diagrams showing the configurations of the satellites of Jupiter, data respecting the disks of Mercury and Venus for the reduction of meridian and photometric observations, and diagrams, with tables, for identifying any known satellites of other planets. The work is divided into three parts, as follows:—

Part I, *Ephemeris for the Meridian of Greenwich*, gives the geocentric and heliocentric positions of the major planets, the Ephemeris of the Sun, and other fundamental astronomical data for equi-distant intervals of Greenwich mean time.

Part II, *Ephemeris for the Meridian of Washington*, gives the ephemerides of the fixed stars, sun, moon, and major planets for transit over the meridian of Washington. The mean places of the fixed stars and the data for their reduction are also included in this part. The list of mean and apparent places of fixed stars has been greatly enlarged, for the convenience of field-astronomers.

Part III, *Phenomena*, contains predictions of phenomena to be observed, with data for their computation. Washington mean time is used in this part except in a few cases, notably that of eclipses, where Greenwich mean time was judged more convenient.

SIMON NEWCOMB,

Professor U. S. Navy, Superintendent.

WASHINGTON, March, 1893.

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CORRECTIONS.

Ephemeris for 1893.

Page.

446. Occultation of B. A. C. 3206, April 23, Immersion,	for	13 ^h 18 ^m	read	13 ^h 13 ^m	
	Emersion,	for	13 ^h 18 ^m	read	14 ^h 18 ^m
	Duration,	for	1 ^h 0 ^m	read	1 ^h 5 ^m
495. Example 3,	for	21.0795	read	21.09532	
	for	21 ^h 4 ^m 46 ^s .14	read	21 ^h 5 ^m 43 ^s .16	

Ephemeris for 1894. (First Edition only.)

419, Greatest Libration of Moon,	for	Jan. 25 ^d 6 ^h 38 ^m	read	Jan. 25 ^d 17 ^h 20 ^m
488, Feb. 5, δ φ \mathcal{D} ,	for	$\varphi - 2^{\circ} 5'$	read	$\varphi + 2^{\circ} 5'$
488, June 20, φ Gr. Hel. Lat.	for	20 ^d 16 ^h 2 ^m	read	19 ^d 16 ^h 2 ^m
489, July 2, \oplus in Aphelion,	for	2 ^d 16 ^h 14 ^m	read	2 ^d 12 ^h 14 ^m
489, July 30, φ Stationary,	for	30 ^d 15 ^h 30 ^m	read	30 ^d 10 ^h 30 ^m
489, Sept. 17, \square Ψ \odot ,	for	17 ^d 18 ^h 26 ^m	read	7 ^d 18 ^h 26 ^m
489, Nov. 11,	for	δ φ \odot	read	δ φ $\hat{\odot}$
489, Dec. 12,	for	δ \mathcal{U} \mathcal{D}	read	δ \mathcal{U} \mathcal{D}
509-511, Omit all relating to Annular phase.				
522, line 7,	for	0''.31	read	0''.28

Ephemeris for 1895. (First Edition only.)

280, Independent Star Numbers,	for	3 ^s .07261	read	3 ^s .07263
414, Solar Eclipse of Sept. 3.	Total eclipse begins	3 ^d 16 ^h 6 ^m .4	read	3 ^d 17 ^h 6 ^m .4
415, Solar Eclipse of Sept. 18.	Eclipse begins in long.	167° 4'.8 W.,	read	164° 20'.1 E.
	Greatest Eclipse in long.	169° 13'.9 E.	read	140° 38'.9 E.
	Eclipse ends in long.	47° 42'.8 W.	read	76° 17'.8 W.
418, Solar Eclipse of Sept. 18.	The values of μ should be increased by			28° 35'
In the chart of this eclipse the diagram should be 28° 35' further to the west.				
489, Insert October 25 ^d 18 ^h , φ greatest brilliancy.				
489, Nov. 8 ^d 14 ^h	for	δ	read	δ
493, Longitude of Tokio,	for	— 16 ^h 14 ^m 19 ^s .85	read	— 14 ^h 27 ^m 10 ^s .0
	for	— 11 ^h 6 ^m 7 ^s .81	read	— 9 ^h 18 ^m 58 ^s .0
493, Longitude of West Point,	for	— 4 ^h 55 ^m 50 ^s .55	read	+ 4 ^h 55 ^m 50 ^s .55
502, line 3,	for	2966	read	2877
505, line 48, Omit the words "and a transit of Mercury."				
516, line 15,	for	\pm 4 ^m .707	read	\pm 14 ^m .707
521, line 7,	for	0''.31	read	0''.28
521, Sirius 1896.0 Δ α	for	+ 0 ^s .083	read	+ 0 ^s .092

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1896, WHICH COMPRISES THE LATTER PART OF THE 120TH AND THE BEGINNING OF THE 121ST YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6609 of the Julian Period;

- " 7404-7405 of the Byzantine era, the year 7404 commencing on September 1st;
- " 5656-5657 of the Jewish era, the year 5657 commencing on September 8th, or, more exactly, at sunset on September 7th;
- " 2649 since the foundation of Rome, according to VARRO;
- " 2643 since the beginning of the era of NABONASSAR, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding, in the notation of chronologists, to the 747th; and, in the notation of astronomers, to the 746th year before the birth of CHRIST;
- " 2672 of the Olympiads, or the fourth year of the 668th Olympiad commencing in July, 1896, if we fix the era of the Olympiads at $775\frac{1}{2}$ years before CHRIST, or near the beginning of July of the year 3938 of the Julian Period;
- " 2208 of the Grecian era, or the era of the SELEUCIDÆ;
- " 1612 of the era of DIOCLETIAN;
- " 2556 of the Japanese era and to the 29th year of the period entitled "Meiji."

The year 1314 of the Mohammedan era, or the era of the Hegira, begins on the 12th day of June, 1896.

The first day of January of the year 1896 is the 2,413,560th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	E D	Solar Cycle	1
Epact	15	Roman Indiction	9
Lunar Cycle or Golden Number	16	Julian Period	6609

DATE	DESCRIPTION	AMOUNT	CHECK NO.	BANK	INTEREST	TOTAL
1/1/19
1/2/19
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1/4/19
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3/9/19
3/10/19
3/11/19
3/12/19

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Right Ascension.		Declination.	
		Apparent Right Ascension.	Hour.	Minute.	Second.	Mean Time.	Hour.	Minute.	Second.
Wed	1	18 46 14.74	11	57	23	3 12 51	1 52	18 42 35.43	
Thurs	2	18 50 32.77	11 54		22 57 3 7	4 7 57	1 52	18 46 31.22	
Fri	3	18 55 4 77	11 50		22 53 3 2	4 35 52	1 52	18 50 28.55	
Sat	4	18 59 28.10	1 50		22 48 3 0	5 2 22	1 52	18 54 25.11	
SUN	5	19 3 51.73	1 47		22 37 34 2	5 3 7	1 52	18 58 21.67	
Mon	6	19 7 14.78	1 48		22 31 4 0	5 57 22	1 52	19 2 18.23	
Tues	7	19 12 37.72	1 49		22 24 18 3	6 22 24	1 52	19 6 14.78	
Wed	8	19 17 5 2	1 49		22 16 3 0	6 48 18	1 52	19 10 11.34	
Thurs	9	19 21 21.83	1 50		22 8 15 5	7 13 22	1 52	19 14 7.90	
Fri	10	19 25 43.11	1 50		21 59 34 2	7 38 54	1 52	19 18 4.46	
Sat	11	19 30 3.83	1 50		21 50 28 8	8 2 22	1 52	19 22 1.02	
SUN	12	19 34 23.22	1 50		21 40 59 7	8 26 41	1 52	19 25 57.58	
Mon	13	19 38 43.54	1 51		21 30 52 3	8 49 4	1 52	19 29 54.74	
Tues	14	19 43 2.68	1 50		21 20 37 1	9 11 27	1 52	19 33 5 79	
Wed	15	19 47 20.75	1 50		21 9 8 2	9 33 48	1 52	19 37 47.25	
Thurs	16	19 51 38.12	1 50		20 58 38 9	9 54 53	1 52	19 41 43.81	
Fri	17	19 55 55.22	1 50		20 47 17	10 14 58	1 52	19 45 40.37	
Sat	18	20 0 11.4	1 50		20 35 46	10 34 47	1 52	19 49 37.23	
SUN	19	20 4 27.74	1 50		20 22 42 3	10 53 35	1 52	19 53 33.48	
Mon	20	20 7 41.53	1 50		20 9 57 0	11 12 42	1 52	19 57 3 04	
Tues	21	20 12 58.48	1 50		19 56 46	11 28 55	1 52	20 1 26.60	
Wed	22	20 17 58.88	1 50		19 43 18 2	11 45 43	1 52	20 5 23.16	
Thurs	23	20 22 2 72	1 50		19 29 2 2	12 1 22	1 52	20 9 19.71	
Fri	24	20 26 32.67	1 50		19 15 15 4	12 17 19	1 52	20 13 16.27	
Sat	25	20 30 43.11	1 50		19 0 58 7	12 3 07	1 52	20 17 12.83	
SUN	26	20 34 53.11	1 50		18 45 48 8	12 18 1	1 52	20 21 9.39	
Mon	27	20 39 2 70	1 50		18 30 2 7	12 32 28	1 52	20 25 5 24	
Tues	28	20 43 5 47	1 50		18 14 5 8	12 47 2	1 52	20 29 2 50	
Wed	29	20 48 1 7	1 50		17 58 8 4	1 12 57	1 52	20 32 5 2	
Thurs	30	20 52 18 8	1 50		17 42 4 7	1 28 23	1 52	20 36 8 51	
Fri	31	20 56 3 7	1 50		17 26 8 2	1 43 59	1 52	20 40 12 27	
Sat	1	20 59 1 7	1 50		17 10 1 4	1 59 53	1 52	20 44 15 73	
SUN	2	21 0 1 7	1 50		16 53 5 4	2 15 47	1 52	20 48 18 69	

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring Signs.	{	1.	♈	Aries.	Autumn Signs.	{	7.	♎	Libra.
		2.	♉	Taurus.			8.	♏	Scorpius.
		3.	♊	Gemini.			9.	♐	Sagittarius.
Summer Signs.	{	4.	♋	Cancer.	Winter Signs.	{	10.	♑	Capricornus.
		5.	♌	Leo.			11.	♒	Aquarius.
		6.	♍	Virgo.			12.	♓	Pisces.

ASPECTS.

- ♌ Conjunction, or having the same Longitude or Right Ascension.
- ♐ Quadrature, or differing 90° in Longitude or Right Ascension.
- ♍ Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

♈	Ascending Node.	°	Degrees.
♏	Descending Node.	'	Minutes of Arc.
N.	North.	"	Seconds of Arc.
S.	South.	h	Hours.
E.	East.	m	Minutes of Time.
W.	West.	s	Seconds of Time.

PART I

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF GREENWICH

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
Wed.	1	^h 18 ^m 46 ^s 15.62	11.040	S. 23 1 43.2	+12.17	16 18.42	71.07	^m 3 39.58	1.180
Thur.	2	18 50 40.43	11.027	22 56 36.7	13.34	16 18.42	71.02	4 7.76	1.167
Frid.	3	18 55 4.91	11.012	22 51 2.8	14.48	16 18.41	70.97	4 35.61	1.153
Sat.	4	18 59 29.02	10.996	22 45 1.6	+15.61	16 18.40	70.92	5 3.08	1.137
SUN.	5	19 3 52.74	10.979	22 38 33.4	16.74	16 18.38	70.86	5 30.17	1.120
Mon.	6	19 8 16.04	10.961	22 31 38.2	17.86	16 18.35	70.80	5 56.84	1.102
Tues.	7	19 12 38.89	10.942	22 24 16.2	+18.97	16 18.32	70.74	6 23.05	1.083
Wed.	8	19 17 1.26	10.922	22 16 27.7	20.07	16 18.28	70.67	6 48.80	1.062
Thur.	9	19 21 23.14	10.901	22 8 12.9	21.16	16 18.24	70.60	7 14.05	1.041
Frid.	10	19 25 44.49	10.878	21 59 32.1	+22.24	16 18.19	70.52	7 38.78	1.019
Sat.	11	19 30 5.29	10.854	21 50 25.4	23.31	16 18.14	70.44	8 2.95	0.995
SUN.	12	19 34 25.51	10.830	21 40 53.1	24.37	16 18.09	70.36	8 26.54	0.971
Mon.	13	19 38 45.12	10.804	21 30 55.5	+25.42	16 18.03	70.28	8 49.54	0.945
Tues.	14	19 43 4.10	10.777	21 20 33.0	26.45	16 17.97	70.19	9 11.90	0.918
Wed.	15	19 47 22.44	10.749	21 9 45.7	27.48	16 17.90	70.10	9 33.62	0.890
Thur.	16	19 51 40.09	10.721	20 58 34.1	+28.49	16 17.83	70.01	9 54.65	0.862
Frid.	17	19 55 57.04	10.691	20 46 58.5	29.48	16 17.76	69.91	10 14.99	0.832
Sat.	18	20 0 13.28	10.661	20 34 59.2	30.45	16 17.68	69.81	10 34.61	0.802
SUN.	19	20 4 28.77	10.630	20 22 36.5	+31.42	16 17.60	69.71	10 53.49	0.771
Mon.	20	20 8 43.50	10.598	20 9 50.9	32.37	16 17.52	69.61	11 11.62	0.739
Tues.	21	20 12 57.47	10.565	19 56 42.6	33.31	16 17.43	69.51	11 28.99	0.707
Wed.	22	20 17 10.65	10.532	19 43 12.2	+34.23	16 17.34	69.40	11 45.56	0.674
Thur.	23	20 21 23.03	10.499	19 29 19.8	35.13	16 17.24	69.30	12 1.34	0.641
Frid.	24	20 25 34.60	10.465	19 15 5.9	36.01	16 17.13	69.19	12 16.32	0.607
Sat.	25	20 29 45.36	10.431	19 0 31.0	+36.89	16 17.02	69.08	12 30.48	0.573
SUN.	26	20 33 55.31	10.397	18 45 35.3	37.75	16 16.91	68.97	12 43.83	0.539
Mon.	27	20 38 4.43	10.363	18 30 19.2	38.59	16 16.79	68.86	12 56.36	0.505
Tues.	28	20 42 12.72	10.329	18 14 43.1	+39.41	16 16.67	68.75	13 8.07	0.471
Wed.	29	20 46 20.20	10.294	17 58 47.4	40.22	16 16.54	68.63	13 18.95	0.437
Thur.	30	20 50 26.85	10.260	17 42 32.4	41.01	16 16.40	68.52	13 29.02	0.402
Frid.	31	20 54 32.68	10.226	17 25 58.6	41.79	16 16.26	68.40	13 38.27	0.368
Sat.	32	20 58 37.70	10.192	S. 17 9 6.3	+42.56	16 16.11	68.29	13 46.70	0.334

NOTE.—The mean time of semidiameter passing may be found by subtracting 0°.19 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Wed.	1	^h 18 ^m 46 ^s 14.94	11.037	S. 23 1 44.0	+12.19	^m 3 39.51	1.180	^h 18 ^m 42 ^s 35.43
Thur.	2	18 50 39.67	11.024	22 56 37.7	13.33	4 7.68	1.167	18 46 31.99
Frid.	3	18 55 4.07	11.009	22 51 3.9	14.47	4 35.52	1.152	18 50 28.55
Sat.	4	18 59 28.10	10.993	22 45 3.0	+15.60	5 2.99	1.136	18 54 25.11
SUN.	5	19 3 51.73	10.976	22 38 34.9	16.73	5 30.06	1.119	18 58 21.67
Mon.	6	19 8 14.95	10.958	22 31 40.0	17.85	5 56.72	1.102	19 2 18.23
Tues.	7	19 12 37.72	10.939	22 24 18.3	+18.96	6 22.94	1.082	19 6 14.78
Wed.	8	19 17 0.02	10.919	22 16 30.0	20.06	6 48.68	1.062	19 10 11.34
Thur.	9	19 21 21.83	10.898	22 8 15.5	21.15	7 13.92	1.041	19 14 7.90
Frid.	10	19 25 43.11	10.876	21 59 34.9	+22.23	7 38.64	1.019	19 18 4.46
Sat.	11	19 30 3.83	10.852	21 50 28.5	23.30	8 2.81	0.995	19 22 1.02
SUN.	12	19 34 23.99	10.827	21 40 56.6	24.36	8 26.41	0.971	19 25 57.58
Mon.	13	19 38 43.54	10.801	21 30 59.3	+25.41	8 49.40	0.945	19 29 54.14
Tues.	14	19 43 2.45	10.774	21 20 37.1	26.44	9 11.76	0.918	19 33 50.69
Wed.	15	19 47 20.73	10.747	21 9 50.2	27.46	9 33.48	0.890	19 37 47.25
Thur.	16	19 51 38.32	10.719	20 58 38.9	+28.47	9 54.51	0.862	19 41 43.81
Frid.	17	19 55 55.22	10.689	20 47 3.6	29.46	10 14.85	0.832	19 45 40.37
Sat.	18	20 0 11.40	10.659	20 35 4.6	30.44	10 34.47	0.802	19 49 36.93
SUN.	19	20 4 26.84	10.628	20 22 42.3	+31.41	10 53.35	0.771	19 53 33.48
Mon.	20	20 8 41.53	10.596	20 9 57.0	32.36	11 11.49	0.740	19 57 30.04
Tues.	21	20 12 55.45	10.564	19 56 49.0	33.30	11 28.85	0.707	20 1 26.60
Wed.	22	20 17 8.58	10.531	19 43 18.9	+34.22	11 45.43	0.674	20 5 23.16
Thur.	23	20 21 20.92	10.497	19 29 26.9	35.12	12 1.21	0.641	20 9 19.71
Frid.	24	20 25 32.46	10.464	19 15 13.4	36.00	12 16.19	0.607	20 13 16.27
Sat.	25	20 29 43.19	10.430	19 0 38.7	+36.88	12 30.36	0.573	20 17 12.83
SUN.	26	20 33 53.10	10.396	18 45 43.3	37.73	12 43.71	0.539	20 21 9.39
Mon.	27	20 38 2.19	10.362	18 30 27.6	38.57	12 56.25	0.505	20 25 5.94
Tues.	28	20 42 10.46	10.327	18 14 51.8	+39.39	13 7.96	0.471	20 29 2.50
Wed.	29	20 46 17.91	10.293	17 58 56.4	40.21	13 18.86	0.437	20 32 59.06
Thur.	30	20 50 24.54	10.259	17 42 41.7	41.00	13 28.93	0.403	20 36 55.61
Frid.	31	20 54 30.36	10.225	17 26 8.2	41.78	13 38.19	0.369	20 40 52.17
Sat.	32	20 58 35.36	10.191	S. 17 9 16.1	+42.55	13 46.63	0.335	20 44 48.73

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour.
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	1	280 38 7.5	38 0.3	152.85	+ 0.57	9.9926500	- 0.3	5 16 32.57
2	2	281 39 16.0	39 8.6	152.86	0.46	9.9926507	+ 0.9	5 12 36.65
3	3	282 40 24.6	40 17.0	152.86	0.34	9.9926542	2.0	5 8 40.74
4	4	283 41 33.3	41 25.5	152.86	+ 0.20	9.9926605	+ 3.1	5 4 44.83
5	5	284 42 42.1	42 34.1	152.87	+ 0.07	9.9926696	4.2	5 0 48.92
6	6	285 43 51.1	43 42.9	152.88	- 0.06	9.9926812	5.3	4 56 53.00
7	7	286 45 0.2	44 51.8	152.88	- 0.18	9.9926952	+ 6.3	4 52 57.09
8	8	287 46 9.4	46 0.8	152.89	0.28	9.9927114	7.2	4 49 1.18
9	9	288 47 18.7	47 10.0	152.89	0.36	9.9927299	8.1	4 45 5.27
10	10	289 48 28.0	48 19.1	152.88	- 0.42	9.9927504	+ 9.0	4 41 9.35
11	11	290 49 37.1	49 28.0	152.88	0.44	9.9927729	9.8	4 37 13.44
12	12	291 50 46.1	50 36.8	152.87	0.43	9.9927972	10.5	4 33 17.53
13	13	292 51 54.9	51 45.4	152.86	- 0.39	9.9928232	+11.2	4 29 21.62
14	14	293 53 3.4	52 53.8	152.84	0.32	9.9928509	11.9	4 25 25.70
15	15	294 54 11.4	54 1.6	152.82	0.24	9.9928802	12.5	4 21 29.79
16	16	295 55 19.0	55 9.0	152.80	- 0.12	9.9929109	+13.1	4 17 33.88
17	17	296 56 25.8	56 15.6	152.77	0.00	9.9929433	13.8	4 13 37.97
18	18	297 57 32.0	57 21.6	152.74	+ 0.13	9.9929774	14.6	4 9 42.06
19	19	298 58 37.4	58 26.8	152.70	+ 0.26	9.9930132	+15.3	4 5 46.14
20	20	299 59 41.9	59 31.1	152.67	0.38	9.9930508	16.0	4 1 50.23
21	21	301 0 45.4	0 34.5	152.63	0.48	9.9930902	16.8	3 57 54.32
22	22	302 1 47.9	1 36.8	152.58	+ 0.56	9.9931315	+17.7	3 53 58.41
23	23	303 2 49.3	2 38.0	152.54	0.62	9.9931750	18.6	3 50 2.50
24	24	304 3 49.6	3 38.2	152.49	0.66	9.9932206	19.5	3 46 6.58
25	25	305 4 48.8	4 37.2	152.44	+ 0.66	9.9932687	+20.5	3 42 10.67
26	26	306 5 46.9	5 35.1	152.40	0.64	9.9933191	21.5	3 38 14.76
27	27	307 6 43.9	6 31.9	152.35	0.59	9.9933719	22.5	3 34 18.85
28	28	308 7 39.9	7 27.7	152.31	+ 0.50	9.9934272	+23.6	3 30 22.94
29	29	309 8 34.7	8 22.4	152.27	0.40	9.9934853	24.6	3 26 27.03
30	30	310 9 28.5	9 16.1	152.22	0.28	9.9935458	25.7	3 22 31.12
31	31	311 10 21.3	10 8.7	152.18	0.15	9.9936089	26.8	3 18 35.21
32	32	312 11 13.2	11 0.5	152.14	+ 0.01	9.9936745	+27.9	3 14 39.30
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st .								Diff. for 1 Hour, —g ^a 8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMIDIAMETER.		HORIZONTAL PARALLAX				UPPER TRANSIT.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.	
	h m	h m	h m	"	h m	"	h m	m	d	
1	16 8.4	16 12.0	59 7.6	+1.21	59 20.9	+1.00	13 13.9	2.45	16.2	
2	16 14.9	16 17.0	59 31.5	0.76	59 39.2	0.53	14 10.8	2.30	17.2	
3	16 18.4	16 19.0	59 44.2	+0.30	59 46.4	+0.08	15 4.2	2.15	18.2	
4	16 18.9	16 18.1	59 46.0	-0.13	59 43.2	-0.32	15 54.5	2.05	19.2	
5	16 16.8	16 15.0	59 38.3	0.48	59 31.6	0.63	16 42.9	2.00	20.2	
6	16 12.7	16 10.1	59 23.2	0.75	59 13.6	0.85	17 30.8	2.00	21.2	
7	16 7.1	16 4.0	59 2.9	-0.93	58 51.4	-0.99	18 19.6	2.07	22.2	
8	16 0.7	15 57.3	58 39.2	1.03	58 26.6	1.07	19 10.4	2.17	23.2	
9	15 53.7	15 50.1	58 13.6	1.10	58 0.3	1.12	20 3.9	2.29	24.2	
10	15 46.4	15 42.6	57 46.7	-1.14	57 32.9	-1.16	21 0.1	2.38	25.2	
11	15 38.8	15 35.0	57 18.9	1.18	57 4.7	1.19	21 57.7	2.41	26.2	
12	15 31.1	15 27.1	56 50.4	1.20	56 35.9	1.21	22 55.0	2.35	27.2	
13	15 23.2	15 19.2	56 21.4	-1.21	56 6.9	-1.21	23 49.8	2.22	28.2	
14	15 15.3	15 11.4	55 52.4	1.20	55 38.2	1.17	6		29.2	
15	15 7.6	15 4.0	55 24.4	1.13	55 11.1	1.08	0 41.0	2.05	0.6	
16	15 0.6	14 57.4	54 58.5	-1.01	54 46.8	-0.93	1 28.3	1.89	1.6	
17	14 54.6	14 52.0	54 36.3	0.83	54 27.0	0.71	2 11.9	1.76	2.6	
18	14 49.9	14 48.3	54 19.3	0.57	54 13.3	0.42	2 52.9	1.66	3.6	
19	14 47.2	14 46.7	54 9.3	-0.25	54 7.3	-0.07	3 32.2	1.62	4.6	
20	14 46.7	14 47.4	54 7.6	+0.12	54 10.2	+0.32	4 11.0	1.62	5.6	
21	14 48.8	14 50.9	54 15.3	0.53	54 23.0	0.75	4 50.4	1.67	6.6	
22	14 53.7	14 57.2	54 33.3	+0.96	54 46.1	+1.18	5 31.6	1.77	7.6	
23	15 1.4	15 6.3	55 1.5	1.38	55 19.3	1.58	6 15.8	1.92	8.6	
24	15 11.7	15 17.8	55 39.4	1.76	56 1.6	1.93	7 4.0	2.10	9.6	
25	15 24.3	15 31.2	56 25.6	+2.06	56 51.0	+2.16	7 56.9	2.30	10.6	
26	15 38.4	15 45.8	57 17.5	2.24	57 44.7	2.26	8 54.2	2.47	11.6	
27	15 53.2	16 0.5	58 11.8	2.24	58 38.4	2.17	9 54.6	2.55	12.6	
28	16 7.4	16 13.8	59 3.8	+2.04	59 27.4	+1.87	10 55.7	2.53	13.6	
29	16 19.6	16 24.5	59 48.6	1.64	60 6.8	1.37	11 55.1	2.42	14.6	
30	16 28.5	16 31.5	60 21.5	1.07	60 32.4	0.74	12 51.6	2.28	15.6	
31	16 33.4	16 34.1	60 39.2	+0.40	60 41.9	+0.05	13 44.9	2.16	16.6	
32	16 33.7	16 32.3	60 40.5	-0.28	60 35.2	-0.59	14 35.9	2.09	17.6	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	7 24 58.12	2.5709	N.25 43 15.0	7.293	0	9 22 46.21	2.3217	N.16 56 53.7	14.032
1	7 27 32.27	2.5673	25 35 52.2	7.467	1	9 25 5.35	2.3162	16 42 48.8	14.131
2	7 30 6.20	2.5636	25 28 18.9	7.641	2	9 27 24.15	2.3106	16 28 38.0	14.228
3	7 32 39.90	2.5597	25 20 35.3	7.812	3	9 29 42.62	2.3052	16 14 21.5	14.323
4	7 35 13.36	2.5558	25 12 41.4	7.983	4	9 32 0.77	2.2997	15 59 59.3	14.417
5	7 37 46.58	2.5517	25 4 37.3	8.152	5	9 34 18.59	2.2943	15 45 31.5	14.508
6	7 40 19.56	2.5476	24 56 23.1	8.321	6	9 36 36.09	2.2890	15 30 58.3	14.598
7	7 42 52.29	2.5433	24 47 58.8	8.488	7	9 38 53.27	2.2837	15 16 19.7	14.687
8	7 45 24.75	2.5388	24 39 24.5	8.653	8	9 41 10.13	2.2783	15 1 35.9	14.773
9	7 47 56.94	2.5343	24 30 40.4	8.818	9	9 43 26.67	2.2731	14 46 47.0	14.857
10	7 50 28.86	2.5298	24 21 46.4	8.982	10	9 45 42.90	2.2679	14 31 53.1	14.940
11	7 53 0.51	2.5252	24 12 42.6	9.143	11	9 47 58.82	2.2628	14 16 54.2	15.022
12	7 55 31.88	2.5204	24 3 29.2	9.303	12	9 50 14.44	2.2578	14 1 50.5	15.101
13	7 58 2.96	2.5155	23 54 6.2	9.463	13	9 52 29.75	2.2528	13 46 42.1	15.178
14	8 0 33.74	2.5106	23 44 33.6	9.622	14	9 54 44.77	2.2478	13 31 29.2	15.253
15	8 3 4.23	2.5057	23 34 51.6	9.778	15	9 56 59.49	2.2428	13 16 11.8	15.327
16	8 5 34.42	2.5006	23 25 0.2	9.933	16	9 59 13.91	2.2380	13 0 50.0	15.398
17	8 8 4.30	2.4954	23 14 59.6	10.087	17	10 1 28.05	2.2333	12 45 24.0	15.468
18	8 10 33.87	2.4902	23 4 49.8	10.239	18	10 3 41.91	2.2287	12 29 53.8	15.537
19	8 13 3.13	2.4850	22 54 30.9	10.390	19	10 5 55.49	2.2240	12 14 19.5	15.604
20	8 15 32.07	2.4798	22 44 3.0	10.538	20	10 8 8.79	2.2193	11 58 41.3	15.668
21	8 18 0.70	2.4744	22 33 26.3	10.685	21	10 10 21.81	2.2147	11 42 59.3	15.731
22	8 20 29.00	2.4689	22 22 40.8	10.832	22	10 12 34.56	2.2103	11 27 13.6	15.792
23	8 22 56.97	2.4635	N.22 11 46.5	10.977	23	10 14 47.05	2.2060	N.11 11 24.2	15.852
THURSDAY 2.					SATURDAY 4.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 25 24.62	2.4581	N.22 0 43.6	11.119	0	10 16 59.28	2.2017	N.10 55 31.3	15.910
1	8 27 51.94	2.4525	21 49 32.2	11.261	1	10 19 11.25	2.1974	10 39 35.0	15.966
2	8 30 18.92	2.4469	21 38 12.3	11.400	2	10 21 22.97	2.1933	10 23 35.4	16.021
3	8 32 45.57	2.4413	21 26 44.2	11.537	3	10 23 34.45	2.1892	10 7 32.5	16.074
4	8 35 11.88	2.4358	21 15 7.9	11.673	4	10 25 45.68	2.1852	9 51 26.5	16.124
5	8 37 37.86	2.4302	21 3 23.4	11.808	5	10 27 56.67	2.1812	9 35 17.6	16.172
6	8 40 3.50	2.4244	20 51 30.9	11.941	6	10 30 7.42	2.1773	9 19 5.8	16.220
7	8 42 28.79	2.4187	20 39 30.5	12.072	7	10 32 17.95	2.1736	9 2 51.2	16.266
8	8 44 53.74	2.4130	20 27 22.3	12.202	8	10 34 28.25	2.1699	8 46 33.9	16.310
9	8 47 18.35	2.4072	20 15 6.3	12.329	9	10 36 38.33	2.1662	8 30 14.0	16.352
10	8 49 42.61	2.4015	20 2 42.8	12.454	10	10 38 48.19	2.1627	8 13 51.6	16.392
11	8 52 6.53	2.3958	19 50 11.8	12.579	11	10 40 57.85	2.1592	7 57 26.9	16.431
12	8 54 30.11	2.3901	19 37 33.3	12.702	12	10 43 7.30	2.1558	7 40 59.9	16.468
13	8 56 53.34	2.3843	19 24 47.5	12.822	13	10 45 16.55	2.1526	7 24 30.7	16.504
14	8 59 16.23	2.3786	19 11 54.6	12.941	14	10 47 25.61	2.1494	7 7 59.4	16.537
15	9 1 38.77	2.3728	18 58 54.6	13.058	15	10 49 34.47	2.1462	6 51 26.2	16.569
16	9 4 0.96	2.3670	18 45 47.6	13.173	16	10 51 43.15	2.1432	6 34 51.1	16.600
17	9 6 22.81	2.3613	18 32 33.8	13.287	17	10 53 51.65	2.1402	6 18 14.2	16.630
18	9 8 44.32	2.3556	18 19 13.2	13.399	18	10 55 59.98	2.1374	6 1 35.5	16.658
19	9 11 5.49	2.3499	18 5 45.9	13.509	19	10 58 8.14	2.1346	5 44 55.3	16.683
20	9 13 26.31	2.3442	17 52 12.1	13.617	20	11 0 16.13	2.1318	5 28 13.6	16.707
21	9 15 46.79	2.3385	17 38 31.9	13.723	21	11 2 23.96	2.1292	5 11 30.5	16.729
22	9 18 6.93	2.3329	17 24 45.4	13.828	22	11 4 31.64	2.1267	4 54 46.1	16.750
23	9 20 26.74	2.3273	17 10 52.6	13.931	23	11 6 39.17	2.1242	4 38 0.5	16.768
24	9 22 46.21	2.3217	N.16 56 53.7	14.032	24	11 8 46.55	2.1219	N. 4 21 13.9	16.785

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	11 8 46.55	2.1119	N. 4 21 13.9	16.785	0	12 49 38.63	2.1152	S. 8 55 54.6	15.868
1	11 10 53.80	2.1196	4 4 26.3	16.802	1	12 51 45.60	2.1172	9 11 45.1	15.814
2	11 13 0.92	2.1175	3 47 37.7	16.817	2	12 53 52.70	2.1193	9 27 32.3	15.759
3	11 15 7.90	2.1154	3 30 48.3	16.829	3	12 55 59.92	2.1214	9 43 16.2	15.702
4	11 17 14.76	2.1134	3 13 58.2	16.841	4	12 58 7.27	2.1237	9 58 56.6	15.644
5	11 19 21.51	2.1116	2 57 7.4	16.851	5	13 0 14.76	2.1259	10 14 33.5	15.585
6	11 21 28.15	2.1098	2 40 16.1	16.858	6	13 2 22.38	2.1282	10 30 6.8	15.524
7	11 23 34.68	2.1080	2 23 24.4	16.865	7	13 4 30.15	2.1307	10 45 36.4	15.462
8	11 25 41.11	2.1064	2 6 32.3	16.870	8	13 6 38.07	2.1333	11 1 2.2	15.398
9	11 27 47.45	2.1049	1 49 40.0	16.873	9	13 8 46.15	2.1360	11 16 24.2	15.334
10	11 29 53.70	2.1035	1 32 47.5	16.876	10	13 10 54.39	2.1387	11 31 42.3	15.267
11	11 31 59.87	2.1021	1 15 54.9	16.876	11	13 13 2.79	2.1414	11 46 56.3	15.199
12	11 34 5.95	2.1008	0 59 2.4	16.874	12	13 15 11.35	2.1442	12 2 6.2	15.131
13	11 36 11.96	2.0997	0 42 10.0	16.872	13	13 17 20.09	2.1471	12 17 12.0	15.061
14	11 38 17.91	2.0986	0 25 17.8	16.868	14	13 19 29.00	2.1500	12 32 13.5	14.988
15	11 40 23.79	2.0975	N. 0 8 25.8	16.863	15	13 21 38.09	2.1530	12 47 10.6	14.915
16	11 42 29.61	2.0967	S. 0 8 25.8	16.856	16	13 23 47.36	2.1561	13 2 3.3	14.841
17	11 44 35.39	2.0959	0 25 16.9	16.847	17	13 25 56.82	2.1592	13 16 51.5	14.766
18	11 46 41.12	2.0952	0 42 7.5	16.837	18	13 28 6.47	2.1625	13 31 35.2	14.689
19	11 48 46.81	2.0946	0 58 57.4	16.826	19	13 30 16.32	2.1658	13 46 14.2	14.610
20	11 50 52.47	2.0940	1 15 46.6	16.813	20	13 32 26.37	2.1691	14 0 48.4	14.530
21	11 52 58.09	2.0935	1 32 34.9	16.798	21	13 34 36.61	2.1724	14 15 17.8	14.449
22	11 55 3.69	2.0932	1 49 22.3	16.783	22	13 36 47.06	2.1759	14 29 42.3	14.367
23	11 57 9.27	2.0929	S. 2 6 8.8	16.766	23	13 38 57.72	2.1795	S. 14 44 1.8	14.285
MONDAY 6.					WEDNESDAY 8.				
0	11 59 14.84	2.0927	S. 2 22 54.2	16.747	0	13 41 8.60	2.1831	S. 14 58 16.2	14.198
1	12 1 20.40	2.0927	2 39 38.4	16.726	1	13 43 19.69	2.1867	15 12 25.5	14.112
2	12 3 25.96	2.0927	2 56 21.3	16.704	2	13 45 31.00	2.1904	15 26 29.6	14.025
3	12 5 31.53	2.0929	3 13 2.9	16.682	3	13 47 42.54	2.1942	15 40 28.3	13.933
4	12 7 37.11	2.0931	3 29 43.1	16.657	4	13 49 54.30	2.1979	15 54 21.6	13.843
5	12 9 42.70	2.0933	3 46 21.8	16.631	5	13 52 6.29	2.2018	16 8 9.5	13.752
6	12 11 48.30	2.0936	4 2 58.8	16.603	6	13 54 18.51	2.2057	16 21 51.9	13.659
7	12 13 53.93	2.0941	4 19 34.1	16.574	7	13 56 30.97	2.2096	16 35 28.6	13.564
8	12 15 59.60	2.0947	4 36 7.7	16.545	8	13 58 43.66	2.2135	16 48 59.6	13.468
9	12 18 5.30	2.0953	4 52 39.5	16.513	9	14 0 56.59	2.2176	17 2 24.8	13.372
10	12 20 11.04	2.0961	5 9 9.3	16.479	10	14 3 9.77	2.2217	17 15 44.2	13.273
11	12 22 16.83	2.0969	5 25 37.0	16.444	11	14 5 23.19	2.2258	17 28 57.6	13.172
12	12 24 22.67	2.0978	5 42 2.6	16.408	12	14 7 36.86	2.2299	17 42 4.9	13.071
13	12 26 28.57	2.0988	5 58 26.0	16.371	13	14 9 50.78	2.2341	17 55 6.1	12.969
14	12 28 34.53	2.0998	6 14 47.1	16.332	14	14 12 4.95	2.2382	18 8 1.2	12.866
15	12 30 40.55	2.1009	6 31 5.9	16.292	15	14 14 19.37	2.2425	18 20 50.0	12.761
16	12 32 46.64	2.1022	6 47 22.2	16.251	16	14 16 34.05	2.2468	18 33 32.5	12.655
17	12 34 52.82	2.1037	7 3 36.0	16.208	17	14 18 48.99	2.2511	18 46 8.6	12.547
18	12 36 59.08	2.1051	7 19 47.2	16.164	18	14 21 4.18	2.2553	18 58 38.1	12.437
19	12 39 5.43	2.1066	7 35 55.7	16.118	19	14 23 19.63	2.2597	19 11 1.0	12.327
20	12 41 11.87	2.1081	7 52 1.4	16.071	20	14 25 35.35	2.2641	19 23 17.3	12.217
21	12 43 18.40	2.1098	8 8 4.2	16.022	21	14 27 51.33	2.2685	19 35 27.0	12.104
22	12 45 25.04	2.1115	8 24 4.1	15.972	22	14 30 7.57	2.2729	19 47 29.8	11.989
23	12 47 31.78	2.1133	8 40 0.9	15.921	23	14 32 24.08	2.2773	19 59 25.7	11.873
24	12 49 38.63	2.1152	S. 8 55 54.6	15.868	24	14 34 40.85	2.2817	S. 20 11 14.6	11.757

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
0	14 34 40.85	2.2817	S.20 11 14.6	11.757	0	16 28 59.23	2.4620	S.26 59 30.5	4.875
1	14 36 57.88	2.2862	20 22 56.5	11.699	1	16 31 27.01	2.4640	27 4 18.1	4.712
2	14 39 15.19	2.2907	20 34 31.3	11.521	2	16 33 54.91	2.4660	27 8 55.9	4.548
3	14 41 32.77	2.2952	20 45 59.0	11.401	3	16 36 22.93	2.4678	27 13 23.8	4.383
4	14 43 50.62	2.2997	20 57 19.4	11.279	4	16 38 51.05	2.4695	27 17 41.8	4.217
5	14 46 8.73	2.3041	21 8 32.4	11.156	5	16 41 19.27	2.4711	27 21 49.8	4.051
6	14 48 27.11	2.3086	21 19 38.1	11.032	6	16 43 47.58	2.4725	27 25 47.9	3.886
7	14 50 45.76	2.3130	21 30 36.3	10.907	7	16 46 15.97	2.4738	27 29 36.1	3.719
8	14 53 4.67	2.3174	21 41 26.9	10.780	8	16 48 44.44	2.4751	27 33 14.2	3.552
9	14 55 23.85	2.3219	21 52 9.9	10.652	9	16 51 12.98	2.4762	27 36 42.3	3.385
10	14 57 43.30	2.3264	22 2 45.2	10.524	10	16 53 41.58	2.4772	27 40 0.4	3.217
11	15 0 3.02	2.3308	22 13 12.8	10.394	11	16 56 10.24	2.4781	27 43 8.4	3.050
12	15 2 23.00	2.3353	22 23 32.5	10.262	12	16 58 38.95	2.4788	27 46 6.4	2.882
13	15 4 43.25	2.3397	22 33 44.3	10.130	13	17 1 7.70	2.4794	27 48 54.3	2.714
14	15 7 3.76	2.3440	22 43 48.1	9.997	14	17 3 36.48	2.4799	27 51 32.1	2.547
15	15 9 24.53	2.3483	22 53 43.9	9.862	15	17 6 5.28	2.4802	27 53 59.9	2.379
16	15 11 45.56	2.3527	23 3 31.6	9.727	16	17 8 34.10	2.4804	27 56 17.6	2.211
17	15 14 6.85	2.3570	23 13 11.1	9.590	17	17 11 2.93	2.4805	27 58 25.2	2.042
18	15 16 28.40	2.3612	23 22 42.4	9.452	18	17 13 31.76	2.4805	28 0 22.6	1.873
19	15 18 50.20	2.3655	23 32 5.4	9.312	19	17 16 0.59	2.4803	28 2 9.9	1.704
20	15 21 12.26	2.3697	23 41 19.9	9.172	20	17 18 29.40	2.4800	28 3 47.1	1.537
21	15 23 34.57	2.3739	23 50 26.0	9.031	21	17 20 58.19	2.4796	28 5 14.3	1.369
22	15 25 57.13	2.3780	23 59 23.6	8.889	22	17 23 26.95	2.4790	28 6 31.4	1.201
23	15 28 19.93	2.3821	S.24 8 12.7	8.746	23	17 25 55.67	2.4782	S.28 7 38.4	1.032
FRIDAY 10.					SUNDAY 12.				
0	15 30 42.98	2.3862	S.24 16 53.1	8.601	0	17 28 24.34	2.4774	S.28 8 35.2	0.864
1	15 33 6.27	2.3902	24 25 24.8	8.456	1	17 30 52.96	2.4765	28 9 22.0	0.696
2	15 35 29.79	2.3940	24 33 47.8	8.309	2	17 33 21.52	2.4754	28 9 58.7	0.528
3	15 37 53.55	2.3979	24 42 1.9	8.161	3	17 35 50.01	2.4742	28 10 25.4	0.361
4	15 40 17.54	2.4017	24 50 7.1	8.013	4	17 38 18.42	2.4728	28 10 42.0	0.193
5	15 42 41.75	2.4054	24 58 3.5	7.865	5	17 40 46.75	2.4713	28 10 48.6	- 0.027
6	15 45 6.19	2.4091	25 5 50.9	7.715	6	17 43 14.98	2.4697	28 10 45.2	+ 0.140
7	15 47 30.85	2.4127	25 13 29.3	7.563	7	17 45 43.11	2.4679	28 10 31.8	0.306
8	15 49 55.72	2.4163	25 20 58.5	7.411	8	17 48 11.13	2.4661	28 10 8.5	0.472
9	15 52 20.81	2.4199	25 28 18.6	7.258	9	17 50 39.04	2.4641	28 9 35.2	0.637
10	15 54 46.11	2.4233	25 35 29.5	7.104	10	17 53 6.82	2.4619	28 8 52.0	0.802
11	15 57 11.61	2.4266	25 42 31.1	6.950	11	17 55 34.47	2.4597	28 7 59.0	0.966
12	15 59 37.30	2.4298	25 49 23.5	6.795	12	17 58 1.98	2.4573	28 6 56.1	1.130
13	16 2 3.19	2.4331	25 56 6.5	6.638	13	18 0 29.34	2.4548	28 5 43.4	1.294
14	16 4 29.27	2.4362	26 2 40.1	6.481	14	18 2 56.55	2.4521	28 4 20.9	1.458
15	16 6 55.53	2.4392	26 9 4.3	6.324	15	18 5 23.59	2.4492	28 2 48.5	1.621
16	16 9 21.97	2.4421	26 15 19.0	6.166	16	18 7 50.46	2.4463	28 1 6.4	1.782
17	16 11 48.58	2.4449	26 21 24.2	6.007	17	18 10 17.15	2.4433	27 59 14.7	1.943
18	16 14 15.36	2.4477	26 27 19.8	5.847	18	18 12 43.66	2.4402	27 57 13.3	2.103
19	16 16 42.30	2.4503	26 33 5.8	5.687	19	18 15 9.98	2.4369	27 55 2.3	2.263
20	16 19 9.40	2.4529	26 38 42.2	5.526	20	18 17 36.09	2.4335	27 52 41.7	2.422
21	16 21 36.65	2.4553	26 44 8.9	5.364	21	18 20 2.00	2.4301	27 50 11.6	2.581
22	16 24 4.04	2.4577	26 49 25.9	5.202	22	18 22 27.70	2.4265	27 47 32.0	2.739
23	16 26 31.57	2.4599	26 54 33.1	5.038	23	18 24 53.18	2.4227	27 44 43.0	2.896
24	16 28 59.23	2.4620	S.26 59 30.5	4.875	24	18 27 18.43	2.4189	S.27 41 44.5	3.053

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	18 27 18.43	2.4189	S. 27 41 44.5	3.053	0	20 17 28.10	2.1512	S. 22 34 19.8	9.310
1	18 29 43.45	2.4150	27 38 36.7	3.208	1	20 19 36.98	2.1448	22 24 58.2	9.410
2	18 32 8.23	2.4110	27 35 19.6	3.363	2	20 21 45.48	2.1385	22 15 30.6	9.510
3	18 34 32.77	2.4068	27 31 53.2	3.517	3	20 23 53.60	2.1321	22 5 57.0	9.608
4	18 36 57.05	2.4026	27 28 17.6	3.669	4	20 26 1.33	2.1258	21 56 17.6	9.705
5	18 39 21.08	2.3983	27 24 32.9	3.821	5	20 28 8.69	2.1195	21 46 32.4	9.800
6	18 41 44.85	2.3939	27 20 39.1	3.972	6	20 30 15.67	2.1132	21 36 41.6	9.894
7	18 44 8.35	2.3893	27 16 36.2	4.122	7	20 32 22.27	2.1068	21 26 45.2	9.987
8	18 46 31.57	2.3847	27 12 24.4	4.271	8	20 34 28.49	2.1006	21 16 43.2	10.079
9	18 48 54.51	2.3800	27 8 3.7	4.419	9	20 36 34.34	2.0943	21 6 35.7	10.169
10	18 51 17.17	2.3752	27 3 34.1	4.567	10	20 38 39.81	2.0881	20 56 22.9	10.258
11	18 53 39.54	2.3703	26 58 55.6	4.714	11	20 40 44.91	2.0819	20 46 4.8	10.346
12	18 56 1.61	2.3653	26 54 8.4	4.859	12	20 42 49.64	2.0757	20 35 41.4	10.433
13	18 58 23.38	2.3603	26 49 12.5	5.003	13	20 44 54.00	2.0696	20 25 12.9	10.518
14	19 0 44.84	2.3552	26 44 8.0	5.147	14	20 46 57.99	2.0634	20 14 39.3	10.602
15	19 3 6.00	2.3500	26 38 54.9	5.289	15	20 49 1.61	2.0573	20 4 0.7	10.684
16	19 5 26.84	2.3447	26 33 33.3	5.430	16	20 51 4.87	2.0512	19 53 17.2	10.766
17	19 7 47.36	2.3393	26 28 3.3	5.569	17	20 53 7.76	2.0452	19 42 28.8	10.847
18	19 10 7.55	2.3338	26 22 25.0	5.708	18	20 55 10.29	2.0392	19 31 35.6	10.926
19	19 12 27.42	2.3283	26 16 38.4	5.846	19	20 57 12.46	2.0332	19 20 37.7	11.005
20	19 14 46.95	2.3228	26 10 43.5	5.983	20	20 59 14.28	2.0273	19 9 35.2	11.080
21	19 17 6.15	2.3172	26 4 40.4	6.119	21	21 1 15.74	2.0213	18 58 28.1	11.156
22	19 19 25.01	2.3115	25 58 29.2	6.252	22	21 3 16.84	2.0155	18 47 16.5	11.231
23	19 21 43.53	2.3057	S. 25 52 10.1	6.384	23	21 5 17.60	2.0097	S. 18 36 0.4	11.304
TUESDAY 14.					THURSDAY 16.				
0	19 24 1.70	2.2999	S. 25 45 43.1	6.516	0	21 7 18.01	2.0039	S. 18 24 40.0	11.376
1	19 26 19.52	2.2941	25 39 8.2	6.647	1	21 9 18.07	1.9982	18 13 15.3	11.447
2	19 28 36.99	2.2882	25 32 25.4	6.777	2	21 11 17.79	1.9925	18 1 46.4	11.516
3	19 30 54.11	2.2823	25 25 34.9	6.905	3	21 13 17.17	1.9868	17 50 13.4	11.584
4	19 33 10.87	2.2763	25 18 36.8	7.033	4	21 15 16.21	1.9812	17 38 36.3	11.652
5	19 35 27.27	2.2703	25 11 31.0	7.159	5	21 17 14.92	1.9757	17 26 55.1	11.719
6	19 37 43.31	2.2643	25 4 17.7	7.283	6	21 19 13.30	1.9702	17 15 10.0	11.783
7	19 39 58.98	2.2582	24 56 57.0	7.407	7	21 21 11.35	1.9647	17 3 21.1	11.847
8	19 42 14.29	2.2521	24 49 28.9	7.529	8	21 23 9.07	1.9592	16 51 28.3	11.911
9	19 44 29.23	2.2459	24 41 53.5	7.650	9	21 25 6.46	1.9539	16 39 31.8	11.972
10	19 46 43.80	2.2397	24 34 10.9	7.769	10	21 27 3.54	1.9486	16 27 31.6	12.033
11	19 48 57.99	2.2334	24 26 21.2	7.887	11	21 29 0.30	1.9433	16 15 27.8	12.092
12	19 51 11.81	2.2272	24 18 24.4	8.005	12	21 30 56.74	1.9381	16 3 20.5	12.151
13	19 53 25.25	2.2209	24 10 20.6	8.121	13	21 32 52.87	1.9330	15 51 9.7	12.208
14	19 55 38.32	2.2147	24 2 9.9	8.235	14	21 34 48.70	1.9279	15 38 55.5	12.264
15	19 57 51.01	2.2083	23 53 52.4	8.348	15	21 36 44.22	1.9228	15 26 38.0	12.319
16	20 0 3.32	2.2020	23 45 28.1	8.461	16	21 38 39.44	1.9179	15 14 17.2	12.374
17	20 2 15.25	2.1957	23 36 57.1	8.571	17	21 40 34.37	1.9131	15 1 53.1	12.427
18	20 4 26.80	2.1893	23 28 19.6	8.680	18	21 42 29.01	1.9082	14 49 25.9	12.479
19	20 6 37.97	2.1830	23 19 35.5	8.789	19	21 44 23.36	1.9034	14 36 55.6	12.530
20	20 8 48.76	2.1766	23 10 44.9	8.896	20	21 46 17.42	1.8986	14 24 22.3	12.580
21	20 10 59.16	2.1703	23 1 48.0	9.001	21	21 48 11.19	1.8938	14 11 46.0	12.629
22	20 13 9.19	2.1640	22 52 44.8	9.105	22	21 50 4.68	1.8892	13 59 6.8	12.677
23	20 15 18.84	2.1576	22 43 35.4	9.208	23	21 51 57.90	1.8847	13 46 24.7	12.725
24	20 17 28.10	2.1512	S. 22 34 19.8	9.310	24	21 53 50.85	1.8802	S. 13 33 39.8	12.771

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	21 53 50.85	1.8802	S. 13 33 39.8	12.771	0	23 20 10.67	1.7439	S. 2 44 42.7	13.956
1	21 55 43.53	1.8758	13 20 52.2	12.816	1	23 21 55.27	1.7488	2 30 45.2	13.961
2	21 57 35.95	1.8714	13 8 1.9	12.859	2	23 23 39.81	1.7418	2 16 47.4	13.967
3	21 59 28.10	1.8671	12 55 9.1	12.902	3	23 25 24.29	1.7408	2 2 49.2	13.972
4	22 1 20.00	1.8628	12 42 13.7	12.945	4	23 27 8.71	1.7400	1 48 50.8	13.975
5	22 3 11.64	1.8586	12 29 15.7	12.987	5	23 28 53.09	1.7392	1 34 52.2	13.978
6	22 5 3.03	1.8544	12 16 15.3	13.027	6	23 30 37.42	1.7385	1 20 53.4	13.981
7	22 6 54.17	1.8504	12 3 12.5	13.066	7	23 32 21.71	1.7379	1 6 54.5	13.982
8	22 8 45.08	1.8465	11 50 7.4	13.104	8	23 34 5.97	1.7373	0 52 55.5	13.983
9	22 10 35.75	1.8425	11 37 0.0	13.142	9	23 35 50.19	1.7368	0 38 56.5	13.983
10	22 12 26.18	1.8385	11 23 50.4	13.178	10	23 37 34.38	1.7364	0 24 57.5	13.983
11	22 14 16.39	1.8349	11 10 38.7	13.213	11	23 39 18.56	1.7361	S. 0 10 58.5	13.983
12	22 16 6.37	1.8312	10 57 24.8	13.248	12	23 41 2.72	1.7358	N. 0 3 0.5	13.982
13	22 17 56.13	1.8275	10 44 8.9	13.282	13	23 42 46.86	1.7357	0 16 59.4	13.980
14	22 19 45.67	1.8239	10 30 51.0	13.315	14	23 44 31.00	1.7356	0 30 58.1	13.976
15	22 21 35.00	1.8204	10 17 31.1	13.347	15	23 46 15.13	1.7355	0 44 56.5	13.972
16	22 23 24.12	1.8169	10 4 9.3	13.378	16	23 47 59.26	1.7356	0 58 54.7	13.968
17	22 25 13.03	1.8135	9 50 45.7	13.409	17	23 49 43.40	1.7357	1 12 52.7	13.964
18	22 27 1.74	1.8102	9 37 20.2	13.439	18	23 51 27.55	1.7359	1 26 50.4	13.958
19	22 28 50.26	1.8070	9 23 53.0	13.467	19	23 53 11.71	1.7362	1 40 47.7	13.952
20	22 30 38.58	1.8038	9 10 24.2	13.494	20	23 54 55.89	1.7365	1 54 44.6	13.946
21	22 32 26.71	1.8007	8 56 53.7	13.521	21	23 56 40.09	1.7369	2 8 41.2	13.939
22	22 34 14.66	1.7977	8 43 21.6	13.548	22	23 58 24.32	1.7374	2 22 37.3	13.930
23	22 36 2.43	1.7947	S. 8 29 48.0	13.573	23	0 0 8.58	1.7379	N. 2 36 32.8	13.921
SATURDAY 18.					MONDAY 20.				
0	22 37 50.02	1.7917	S. 8 16 12.8	13.598	0	0 1 52.87	1.7385	N. 2 50 27.8	13.912
1	22 39 37.44	1.7889	8 2 36.2	13.622	1	0 3 37.20	1.7393	3 4 22.2	13.902
2	22 41 24.69	1.7862	7 48 58.2	13.644	2	0 5 21.58	1.7402	3 18 16.0	13.892
3	22 43 11.78	1.7835	7 35 18.9	13.666	3	0 7 6.02	1.7411	3 32 9.2	13.880
4	22 44 58.71	1.7809	7 21 38.3	13.687	4	0 8 50.51	1.7420	3 46 1.6	13.867
5	22 46 45.49	1.7784	7 7 56.4	13.708	5	0 10 35.06	1.7430	3 59 53.3	13.855
6	22 48 32.12	1.7759	6 54 13.3	13.728	6	0 12 19.67	1.7441	4 13 44.2	13.842
7	22 50 18.60	1.7735	6 40 29.1	13.747	7	0 14 4.35	1.7452	4 27 34.3	13.827
8	22 52 4.94	1.7712	6 26 43.7	13.766	8	0 15 49.10	1.7465	4 41 23.5	13.812
9	22 53 51.14	1.7689	6 12 57.2	13.783	9	0 17 33.93	1.7479	4 55 11.8	13.797
10	22 55 37.21	1.7667	5 59 9.7	13.799	10	0 19 18.85	1.7493	5 8 59.1	13.781
11	22 57 23.15	1.7647	5 45 21.3	13.815	11	0 21 3.85	1.7507	5 22 45.5	13.765
12	22 59 8.97	1.7627	5 31 31.9	13.830	12	0 22 48.94	1.7523	5 36 30.9	13.747
13	23 0 54.67	1.7607	5 17 41.7	13.844	13	0 24 34.13	1.7540	5 50 15.2	13.729
14	23 2 40.25	1.7588	5 3 50.6	13.858	14	0 26 19.42	1.7557	6 3 58.4	13.711
15	23 4 25.72	1.7570	4 49 58.7	13.872	15	0 28 4.81	1.7574	6 17 40.5	13.692
16	23 6 11.09	1.7552	4 36 6.0	13.884	16	0 29 50.31	1.7593	6 31 21.4	13.671
17	23 7 56.35	1.7535	4 22 12.6	13.895	17	0 31 35.93	1.7613	6 45 1.0	13.650
18	23 9 41.51	1.7519	4 8 18.6	13.906	18	0 33 21.67	1.7633	6 58 39.4	13.629
19	23 11 26.58	1.7504	3 54 23.9	13.916	19	0 35 7.53	1.7654	7 12 16.5	13.607
20	23 13 11.56	1.7489	3 40 28.7	13.925	20	0 36 53.52	1.7676	7 25 52.2	13.584
21	23 14 56.45	1.7475	3 26 32.9	13.934	21	0 38 39.64	1.7698	7 39 26.6	13.561
22	23 16 41.26	1.7463	3 12 36.6	13.942	22	0 40 25.90	1.7722	7 52 59.6	13.537
23	23 18 26.00	1.7451	2 58 39.9	13.949	23	0 42 12.30	1.7746	8 6 31.1	13.512
24	23 20 10.67	1.7439	S. 2 44 42.7	13.956	24	0 43 58.85	1.7771	N. 8 20 1.0	13.486

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	43 58.85	1.7771	N. 8 20 1.0	13.486	0	2 13 35.52	1.9650	N. 18 23 14.1	11.315
1	45 45.55	1.7797	8 33 29.4	13.460	1	2 15 34.80	1.9911	18 34 31.0	11.247
2	47 32.41	1.7823	8 46 56.2	13.433	2	2 17 34.45	1.9973	18 45 43.8	11.178
3	49 19.43	1.7850	9 0 21.4	13.406	3	2 19 34.48	2.0036	18 56 52.4	11.108
4	51 6.61	1.7878	9 13 44.9	13.377	4	2 21 34.88	2.0098	19 7 56.7	11.037
5	52 53.96	1.7907	9 27 6.6	13.348	5	2 23 35.65	2.0160	19 18 56.8	10.965
6	54 41.49	1.7937	9 40 26.6	13.318	6	2 25 36.80	2.0224	19 29 52.5	10.891
7	56 29.20	1.7967	9 53 44.8	13.288	7	2 27 38.34	2.0288	19 40 43.7	10.816
8	58 17.09	1.7997	10 7 1.1	13.257	8	2 29 40.26	2.0352	19 51 30.4	10.740
9	1 0 5.17	1.8029	10 20 15.6	13.225	9	2 31 42.57	2.0418	20 2 12.5	10.662
10	1 1 53.44	1.8062	10 33 28.1	13.192	10	2 33 45.28	2.0484	20 12 49.9	10.584
11	1 3 41.91	1.8095	10 46 38.6	13.158	11	2 35 48.38	2.0550	20 23 22.6	10.505
12	1 5 30.58	1.8129	10 59 47.0	13.123	12	2 37 51.88	2.0617	20 33 50.5	10.424
13	1 7 19.46	1.8164	11 12 53.4	13.088	13	2 39 55.79	2.0685	20 44 13.5	10.342
14	1 9 8.55	1.8200	11 25 57.6	13.052	14	2 42 0.10	2.0753	20 54 31.6	10.259
15	1 10 57.86	1.8237	11 38 59.6	13.015	15	2 44 4.82	2.0821	21 4 44.6	10.174
16	1 12 47.39	1.8273	11 51 59.4	12.978	16	2 46 9.95	2.0890	21 14 52.5	10.089
17	1 14 37.13	1.8311	12 4 57.0	12.941	17	2 48 15.50	2.0960	21 24 55.3	10.003
18	1 16 27.12	1.8349	12 17 52.3	12.902	18	2 50 21.47	2.1030	21 34 52.9	9.915
19	1 18 17.33	1.8389	12 30 45.2	12.862	19	2 52 27.86	2.1100	21 44 45.1	9.825
20	1 20 7.79	1.8430	12 43 35.7	12.821	20	2 54 34.67	2.1170	21 54 31.9	9.735
21	1 21 58.49	1.8471	12 56 23.7	12.779	21	2 56 41.90	2.1241	22 4 13.3	9.643
22	1 23 49.44	1.8512	13 9 9.2	12.737	22	2 58 49.56	2.1312	22 13 49.1	9.549
23	1 25 40.64	1.8554	N. 13 21 52.1	12.694	23	3 0 57.65	2.1384	N. 22 23 19.2	9.454
WEDNESDAY 22.					FRIDAY 24.				
0	1 27 32.09	1.8597	N. 13 34 32.4	12.650	0	3 3 6.17	2.1456	N. 22 32 43.6	9.358
1	1 29 23.80	1.8641	13 47 10.1	12.605	1	3 5 15.12	2.1529	22 42 2.2	9.262
2	1 31 15.78	1.8687	13 59 45.0	12.559	2	3 7 24.51	2.1602	22 51 15.0	9.164
3	1 33 8.04	1.8732	14 12 17.1	12.512	3	3 9 34.34	2.1675	23 0 21.9	9.064
4	1 35 0.57	1.8778	14 24 46.4	12.465	4	3 11 44.61	2.1747	23 9 22.7	8.963
5	1 36 53.38	1.8825	14 37 12.9	12.417	5	3 13 55.31	2.1820	23 18 17.4	8.861
6	1 38 46.47	1.8872	14 49 36.4	12.367	6	3 16 6.45	2.1894	23 27 6.0	8.757
7	1 40 39.85	1.8921	15 1 56.9	12.317	7	3 18 18.04	2.1968	23 35 48.3	8.652
8	1 42 33.52	1.8970	15 14 14.4	12.266	8	3 20 30.07	2.2042	23 44 24.2	8.544
9	1 44 27.49	1.9020	15 26 28.8	12.213	9	3 22 42.55	2.2117	23 52 53.6	8.436
10	1 46 21.76	1.9071	15 38 40.0	12.160	10	3 24 55.47	2.2191	24 1 16.5	8.327
11	1 48 16.34	1.9122	15 50 48.0	12.107	11	3 27 8.84	2.2265	24 9 32.9	8.217
12	1 50 11.22	1.9174	16 2 52.8	12.053	12	3 29 22.65	2.2339	24 17 42.6	8.105
13	1 52 6.42	1.9227	16 14 54.3	11.997	13	3 31 36.91	2.2413	24 25 45.5	7.992
14	1 54 1.94	1.9280	16 26 52.4	11.939	14	3 33 51.61	2.2488	24 33 41.6	7.876
15	1 55 57.78	1.9333	16 38 47.0	11.881	15	3 36 6.77	2.2564	24 41 30.7	7.759
16	1 57 53.94	1.9388	16 50 38.1	11.822	16	3 38 22.38	2.2638	24 49 12.7	7.642
17	1 59 50.44	1.9444	17 2 25.7	11.763	17	3 40 38.43	2.2712	24 56 47.7	7.523
18	2 1 47.27	1.9500	17 14 9.7	11.703	18	3 42 54.93	2.2787	25 4 15.5	7.403
19	2 3 44.44	1.9557	17 25 50.0	11.641	19	3 45 11.88	2.2862	25 11 36.0	7.281
20	2 5 41.96	1.9615	17 37 26.6	11.577	20	3 47 29.27	2.2936	25 18 49.2	7.158
21	2 7 39.82	1.9673	17 48 59.3	11.513	21	3 49 47.11	2.3010	25 25 54.9	7.033
22	2 9 38.03	1.9732	18 0 28.2	11.449	22	3 52 5.39	2.3083	25 32 53.1	6.907
23	2 11 36.60	1.9791	18 11 53.2	11.382	23	3 54 24.11	2.3157	25 39 43.7	6.778
24	2 13 35.52	1.9850	N. 18 23 14.1	11.315	24	3 56 43.28	2.3231	N. 25 46 26.5	6.648

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 25.					MONDAY 27.				
0	3 56 43.28	2.3231	N. 25 46 26.5	6.648	0	5 55 31.86	2.5894	N. 28 11 21.5	1.059
1	3 59 2.89	2.3304	25 53 1.5	6.518	1	5 58 7.31	2.5921	28 10 12.4	1.244
2	4 1 22.93	2.3377	25 59 28.7	6.387	2	6 0 42.91	2.5945	28 8 52.2	1.428
3	4 3 43.41	2.3450	26 5 48.0	6.254	3	6 3 18.65	2.5967	28 7 21.0	1.613
4	4 6 4.33	2.3522	26 11 59.2	6.119	4	6 5 54.52	2.5989	28 5 38.6	1.800
5	4 8 25.68	2.3594	26 18 2.3	5.982	5	6 8 30.52	2.6009	28 3 45.0	1.987
6	4 10 47.46	2.3666	26 23 57.1	5.844	6	6 11 6.63	2.6028	28 1 40.2	2.174
7	4 13 9.67	2.3737	26 29 43.6	5.705	7	6 13 42.85	2.6044	27 59 24.2	2.361
8	4 15 32.30	2.3808	26 35 21.7	5.565	8	6 16 19.16	2.6058	27 56 56.9	2.548
9	4 17 55.36	2.3878	26 40 51.4	5.424	9	6 18 55.55	2.6072	27 54 18.4	2.736
10	4 20 18.84	2.3947	26 46 12.6	5.281	10	6 21 32.02	2.6083	27 51 28.6	2.924
11	4 22 42.73	2.4016	26 51 25.1	5.135	11	6 24 8.55	2.6094	27 48 27.5	3.112
12	4 25 7.03	2.4084	26 56 28.8	4.989	12	6 26 45.15	2.6103	27 45 15.1	3.301
13	4 27 31.74	2.4152	27 1 23.7	4.842	13	6 29 21.79	2.6109	27 41 51.4	3.489
14	4 29 56.86	2.4220	27 6 9.8	4.693	14	6 31 58.46	2.6114	27 38 16.4	3.677
15	4 32 22.38	2.4287	27 10 46.9	4.543	15	6 34 35.16	2.6118	27 34 30.1	3.866
16	4 34 48.30	2.4352	27 15 15.0	4.392	16	6 37 11.88	2.6121	27 30 32.5	4.054
17	4 37 14.60	2.4416	27 19 33.9	4.238	17	6 39 48.61	2.6122	27 26 23.6	4.242
18	4 39 41.29	2.4481	27 23 43.6	4.084	18	6 42 25.34	2.6120	27 22 3.5	4.429
19	4 42 8.37	2.4544	27 27 44.0	3.929	19	6 45 2.05	2.6118	27 17 32.1	4.617
20	4 44 35.82	2.4606	27 31 35.1	3.772	20	6 47 38.75	2.6114	27 12 49.4	4.806
21	4 47 3.64	2.4668	27 35 16.7	3.614	21	6 50 15.42	2.6108	27 7 55.4	4.993
22	4 49 31.83	2.4729	27 38 48.8	3.455	22	6 52 52.05	2.6101	27 2 50.2	5.181
23	4 52 0.39	2.4789	N. 27 42 11.3	3.295	23	6 55 28.63	2.6092	N. 26 57 33.7	5.368
SUNDAY 26.					TUESDAY 28.				
0	4 54 29.30	2.4847	N. 27 45 24.2	3.133	0	6 58 5.15	2.6082	N. 26 52 6.0	5.555
1	4 56 58.56	2.4905	27 48 27.3	2.970	1	7 0 41.61	2.6070	26 46 27.1	5.742
2	4 59 28.16	2.4962	27 51 20.6	2.806	2	7 3 17.99	2.6057	26 40 37.0	5.927
3	5 1 58.10	2.5018	27 54 4.0	2.640	3	7 5 54.29	2.6043	26 34 35.9	6.111
4	5 4 28.37	2.5073	27 56 37.4	2.474	4	7 8 30.50	2.6026	26 28 23.7	6.296
5	5 6 58.97	2.5126	27 59 0.9	2.307	5	7 11 6.61	2.6008	26 22 0.4	6.481
6	5 9 29.88	2.5178	28 1 14.3	2.138	6	7 13 42.60	2.5989	26 15 26.0	6.665
7	5 12 1.10	2.5229	28 3 17.5	1.968	7	7 16 18.48	2.5970	26 8 40.6	6.847
8	5 14 32.63	2.5279	28 5 10.5	1.797	8	7 18 54.24	2.5948	26 1 44.3	7.029
9	5 17 4.45	2.5327	28 6 53.2	1.626	9	7 21 29.86	2.5925	25 54 37.1	7.211
10	5 19 36.56	2.5375	28 8 25.6	1.452	10	7 24 5.34	2.5901	25 47 19.0	7.392
11	5 22 8.95	2.5421	28 9 47.5	1.277	11	7 26 40.67	2.5876	25 39 50.0	7.573
12	5 24 41.61	2.5466	28 10 58.9	1.102	12	7 29 15.85	2.5849	25 32 10.2	7.753
13	5 27 14.54	2.5510	28 11 59.8	0.927	13	7 31 50.86	2.5821	25 24 19.7	7.931
14	5 29 47.73	2.5552	28 12 50.1	0.751	14	7 34 25.70	2.5792	25 16 18.5	8.107
15	5 32 21.16	2.5592	28 13 29.9	0.574	15	7 37 0.36	2.5762	25 8 6.8	8.283
16	5 34 54.81	2.5632	28 13 59.0	0.395	16	7 39 34.84	2.5730	24 59 44.5	8.459
17	5 37 28.74	2.5670	28 14 17.3	0.216	17	7 42 9.12	2.5697	24 51 11.7	8.634
18	5 40 2.87	2.5707	28 14 24.9	+ 0.037	18	7 44 43.20	2.5663	24 42 28.4	8.808
19	5 42 37.22	2.5742	28 14 21.7	- 0.144	19	7 47 17.07	2.5628	24 33 34.7	8.980
20	5 45 11.77	2.5775	28 14 7.6	0.326	20	7 49 50.74	2.5593	24 24 30.8	9.150
21	5 47 46.52	2.5807	28 13 42.5	0.509	21	7 52 24.19	2.5557	24 15 16.7	9.320
22	5 50 21.46	2.5838	28 13 6.5	0.692	22	7 54 57.42	2.5519	24 5 52.4	9.490
23	5 52 56.58	2.5867	28 12 19.5	0.875	23	7 57 30.42	2.5480	23 56 17.9	9.658
24	5 55 31.86	2.5894	N. 28 11 21.5	1.059	24	8 0 3.18	2.5440	N. 23 46 33.4	9.824

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 29.					FRIDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	8 0 3.18	2.5440	N.23 46 33.4	9.824	1	9 56 41.24	2.3112	N.13 13 1.5	15.883
2	8 2 35.70	2.5400	23 36 39.0	9.989	2	9 58 59.78	2.3067	12 57 6.1	15.962
3	8 5 7.98	2.5359	23 26 34.7	10.153	3	10 1 18.05	2.3022	12 41 6.0	16.041
4	8 7 40.01	2.5317	23 16 20.6	10.316	4	10 3 36.05	2.2977	12 25 1.2	16.117
5	8 10 11.79	2.5274	23 5 56.8	10.477	5	10 5 53.78	2.2933	12 8 52.0	16.190
6	8 12 43.30	2.5230	22 55 23.4	10.636	6	10 8 11.25	2.2889	11 52 38.4	16.262
7	8 15 14.55	2.5187	22 44 40.5	10.794	7	10 10 28.45	2.2846	11 36 20.5	16.332
8	8 17 45.54	2.5142	22 33 48.1	10.952	8	10 12 45.40	2.2804	11 19 58.5	16.400
9	8 20 16.25	2.5096	22 22 46.3	11.108	9	10 15 2.10	2.2762	11 3 32.5	16.466
10	8 22 46.69	2.5050	22 11 35.2	11.262	10	10 17 18.54	2.2720	10 47 2.6	16.529
11	8 25 16.85	2.5003	22 0 14.9	11.413	11	10 19 34.74	2.2680	10 30 29.0	16.592
12	8 27 46.73	2.4956	21 48 45.6	11.563	12	10 21 50.70	2.2639	10 13 51.7	16.651
13	8 30 16.32	2.4908	21 37 7.3	11.713	13	10 24 6.41	2.2599	9 57 10.9	16.708
14	8 32 45.63	2.4861	21 25 20.0	11.862	14	10 26 21.89	2.2561	9 40 26.7	16.764
15	8 35 14.65	2.4812	21 13 23.9	12.007	15	10 28 37.14	2.2523	9 23 39.2	16.818
16	8 37 43.37	2.4763	21 1 19.2	12.150	16	10 30 52.17	2.2486	9 6 48.5	16.870
17	8 40 11.80	2.4713	20 49 5.9	12.293	17	10 33 6.97	2.2448	8 49 54.8	16.919
18	8 42 39.93	2.4663	20 36 44.0	12.435	18	10 35 21.55	2.2412	8 32 58.2	16.967
19	8 45 7.76	2.4613	20 24 13.7	12.574	19	10 37 35.92	2.2377	8 15 58.8	17.012
20	8 47 35.29	2.4563	20 11 35.1	12.712	20	10 39 50.08	2.2343	7 58 56.7	17.056
21	8 50 2.52	2.4512	19 58 48.3	12.848	21	10 42 4.04	2.2309	7 41 52.1	17.097
22	8 52 29.44	2.4462	19 45 53.4	12.982	22	10 44 17.79	2.2275	7 24 45.0	17.137
23	8 54 56.06	2.4411	19 32 50.5	13.113	23	10 46 31.34	2.2243	7 7 35.6	17.175
	8 57 22.37	2.4360	N.19 19 39.8	13.243		10 48 44.71	2.2212	N. 6 50 24.0	17.212
THURSDAY 30.					SATURDAY, FEBRUARY 1.				
0	8 59 48.38	2.4309	N.19 6 21.3	13.372	0	10 50 57.89	2.2182	N. 6 33 10.2	17.246
1	9 2 14.08	2.4258	18 52 55.1	13.499					
2	9 4 39.47	2.4206	18 39 21.4	13.624					
3	9 7 4.55	2.4154	18 25 40.2	13.747					
4	9 9 29.32	2.4103	18 11 51.7	13.868					
5	9 11 53.79	2.4052	17 57 56.0	13.987					
6	9 14 17.95	2.4001	17 43 53.2	14.105					
7	9 16 41.80	2.3949	17 29 43.4	14.221					
8	9 19 5.34	2.3898	17 15 26.7	14.334					
9	9 21 28.57	2.3847	17 1 3.3	14.446					
10	9 23 51.50	2.3797	16 46 33.2	14.556					
11	9 26 14.13	2.3746	16 31 56.6	14.663					
12	9 28 36.45	2.3695	16 17 13.6	14.769					
13	9 30 58.47	2.3645	16 2 24.3	14.872					
14	9 33 20.19	2.3595	15 47 28.9	14.974					
15	9 35 41.61	2.3545	15 32 27.4	15.074					
16	9 38 2.73	2.3496	15 17 20.0	15.172					
17	9 40 23.56	2.3447	15 2 6.8	15.268					
18	9 42 44.09	2.3398	14 46 47.9	15.362					
19	9 45 4.33	2.3349	14 31 23.4	15.453					
20	9 47 24.28	2.3302	14 15 53.5	15.543					
21	9 49 43.95	2.3254	14 0 18.2	15.632					
22	9 52 3.33	2.3207	13 44 37.7	15.718					
23	9 54 22.43	2.3159	13 28 52.1	15.802					
24	9 56 41.24	2.3112	N.13 13 1.5	15.883					
					PHASES OF THE MOON.				
					d h m				
					☾ Last Quarter . . . Jan.	7	3	24.9	
					● New Moon	14	10	19.4	
					☾ First Quarter	22	14	42.3	
					○ Full Moon	29	20	55.3	
					d h				
					☾ Perigee Jan.	3	16.1		
					☾ Apogee	19	16.4		
					☾ Perigee	31	13.9		

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	α Arietis W.	72 31 3	2297	74 17 7	2288	76 3 24	2280	77 49 53	2272
	Aldebaran W.	41 42 50	2441	43 25 27	2422	45 8 30	2405	46 51 57	2389
	Regulus E.	39 23 47	2274	37 37 10	2267	35 50 22	2259	34 3 22	2252
	Spica E.	93 25 17	2277	91 38 43	2269	89 51 58	2261	88 5 1	2254
2	α Arietis W.	86 44 49	2243	88 32 13	2238	90 19 44	2234	92 7 21	2231
	Aldebaran W.	55 34 12	2331	57 19 27	2322	59 4 54	2314	60 50 33	2307
	Spica E.	79 7 51	2225	77 20 0	2220	75 32 3	2216	73 44 0	2212
	SATURN E.	103 5 40	2283	101 19 16	2279	99 32 45	2274	97 46 7	2270
	VENUS E.	114 5 14	2637	112 27 9	2632	110 48 57	2626	109 10 38	2621
3	α Arietis W.	101 6 28	2280	102 54 25	2220	104 42 22	2220	106 30 19	2220
	Aldebaran W.	69 40 56	2284	71 27 19	2282	73 13 45	2280	75 0 14	2279
	Pollux W.	26 24 48	2232	28 12 28	2228	30 0 14	2225	31 48 5	2222
	Spica E.	64 42 41	2205	62 54 18	2202	61 5 53	2202	59 17 28	2202
	SATURN E.	88 51 50	2259	87 4 50	2258	85 17 49	2258	83 30 48	2258
	VENUS E.	100 57 43	2607	99 18 58	2607	97 40 12	2606	96 1 25	2605
	Antares E.	110 35 38	2200	108 47 11	2200	106 58 43	2200	105 10 15	2199
4	Aldebaran W.	83 52 51	2281	85 39 19	2283	87 25 44	2285	89 12 6	2288
	Pollux W.	40 47 53	2220	42 35 50	2221	44 23 46	2223	46 11 39	2225
	Spica E.	50 15 38	2209	48 27 24	2211	46 39 13	2214	44 51 7	2217
	SATURN E.	74 36 2	2267	72 49 14	2270	71 2 30	2273	69 15 51	2277
	VENUS E.	87 47 40	2612	86 9 2	2615	84 30 27	2618	82 51 57	2622
	Antares E.	96 8 4	2205	94 19 44	2208	92 31 28	2210	90 43 16	2213
	MARS E.	104 23 54	2444	102 41 22	2446	100 58 53	2448	99 16 27	2452
5	Aldebaran W.	98 2 36	2309	99 48 22	2315	101 34 0	2320	103 19 30	2327
	Pollux W.	55 10 3	2242	56 57 28	2247	58 44 46	2251	60 31 58	2256
	JUPITER W.	39 59 28	2202	41 47 52	2206	43 36 10	2211	45 24 21	2216
	SATURN E.	60 24 15	2303	58 38 20	2309	56 52 34	2316	55 6 58	2324
	VENUS E.	74 40 51	2646	73 2 58	2652	71 25 13	2658	69 47 37	2664
	Antares E.	81 43 31	2233	79 55 53	2237	78 8 21	2242	76 20 56	2247
	MARS E.	90 45 33	2472	89 3 40	2476	87 21 53	2482	85 40 14	2487
	SUN E.	118 10 30	2566	116 30 48	2571	114 51 13	2576	113 11 44	2581
6	Pollux W.	69 26 4	2283	71 12 28	2289	72 58 44	2295	74 44 51	2302
	JUPITER W.	54 23 24	2243	56 10 48	2249	57 58 3	2255	59 45 9	2261
	Regulus W.	32 29 34	2275	34 16 10	2282	36 2 36	2288	37 48 53	2294
	SATURN E.	46 21 52	2367	44 37 30	2378	42 53 24	2389	41 9 34	2401
	VENUS E.	61 41 55	2701	60 5 17	2710	58 28 51	2719	56 52 36	2728
	Antares E.	67 25 52	2276	65 39 17	2282	63 52 51	2288	62 6 34	2295
	MARS E.	77 14 1	2517	75 33 12	2525	73 52 33	2532	72 12 4	2538
	SUN E.	104 56 14	2610	103 17 33	2616	101 39 0	2623	100 0 36	2629
7	Pollux W.	83 33 2	2335	85 18 11	2342	87 3 10	2348	88 47 59	2355
	JUPITER W.	68 38 19	2294	70 24 28	2300	72 10 27	2307	73 56 16	2314
	Regulus W.	46 37 55	2328	48 23 14	2335	50 8 22	2342	51 53 20	2349
	VENUS E.	48 54 31	2779	47 19 35	2790	45 44 54	2802	44 10 29	2814
	Antares E.	53 17 35	2328	51 32 17	2335	49 47 9	2342	48 2 11	2350
	MARS E.	63 52 7	2576	62 12 39	2584	60 33 22	2592	58 54 16	2599
	SUN E.	91 50 56	2665	90 13 29	2672	88 36 12	2680	86 59 5	2688

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Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Arietis W.	79 36 33	2266	81 23 23	2259	83 10 23	2253	84 57 32	2247
	Aldebaran W.	48 35 47	2375	50 19 57	2362	52 4 26	2351	53 49 11	2340
	Regulus E.	32 16 12	2245	30 28 52	2239	28 41 22	2233	26 53 44	2228
	Spica E.	86 17 54	2247	84 30 37	2241	82 43 10	2235	80 55 35	2229
2	α Arietis W.	93 55 3	2227	95 42 50	2225	97 30 40	2223	99 18 33	2222
	Aldebaran W.	62 36 22	2301	64 22 20	2296	66 8 26	2291	67 54 38	2287
	Spica E.	71 55 51	2210	70 7 38	2208	68 19 22	2206	66 31 3	2204
	SATURN E.	95 59 24	2267	94 12 36	2264	92 25 44	2262	90 38 48	2260
	VENUS E.	107 32 12	2618	105 53 41	2614	104 15 5	2612	102 36 26	2609
3	α Arietis W.	108 18 16	2221	110 6 12	2223	111 54 5	2225	113 41 56	2227
	Aldebaran W.	76 46 45	2278	78 33 17	2278	80 19 49	2278	82 6 21	2279
	Pollux W.	33 36 0	2220	35 23 57	2219	37 11 56	2219	38 59 55	2220
	Spica E.	57 29 3	2202	55 40 39	2203	53 52 16	2205	52 3 56	2206
	SATURN E.	81 43 47	2259	79 56 47	2260	78 9 49	2262	76 22 54	2264
	VENUS E.	94 22 37	2606	92 43 50	2607	91 5 5	2608	89 26 21	2610
	Antares E.	103 21.46	2200	101 33 18	2200	99 44 51	2202	97 56 26	2204
4	Aldebaran W.	90 58 23	2291	92 44 35	2295	94 30 42	2300	96 16 42	2304
	Pollux W.	47 59 29	2228	49 47 15	2231	51 34 56	2235	53 22 32	2238
	Spica E.	43 3 5	2221	41 15 9	2225	39 27 18	2229	37 39 34	2234
	SATURN E.	67 29 18	2281	65 42 51	2286	63 56 31	2291	62 10 19	2297
	VENUS E.	81 13 32	2606	79 35 13	2609	77 56 59	2615	76 18 52	2640
	Antares E.	88 55 8	2216	87 7 5	2220	85 19 8	2224	83 31 16	2229
	MARS E.	97 34 6	2455	95 51 49	2459	94 9 38	2465	92 27 33	2467
5	Aldebaran W.	105 4 50	2333	106 50 1	2341	108 35 1	2348	110 19 50	2356
	Pollux W.	62 19 3	2261	64 6 0	2266	65 52 50	2272	67 39 31	2277
	JUPITER W.	47 12 25	2220	49 0 22	2226	50 48 11	2231	52 35 52	2237
	SATURN E.	53 21 33	2331	51 36 19	2339	49 51 17	2348	48 6 28	2357
	VENUS E.	68 10 9	2672	66 32 51	2678	64 55 42	2686	63 18 43	2694
	Antares E.	74 33 39	2253	72 46 30	2258	70 59 29	2264	69 12 36	2270
	MARS E.	83 58 43	2493	82 17 20	2499	80 36 5	2505	78 54 59	2511
	SUN E.	111 32 23	2586	109 53 9	2592	108 14 2	2598	106 35 4	2604
6	Pollux W.	76 30 48	2308	78 16 36	2315	80 2 14	2321	81 47 43	2328
	JUPITER W.	61 32 6	2267	63 18 54	2274	65 5 32	2281	66 52 0	2287
	Regulus W.	39 35 1	2301	41 20 59	2308	43 6 47	2314	44 52 26	2321
	SATURN E.	39 26 1	2415	37 42 47	2422	35 59 52	2443	34 17 19	2459
	VENUS E.	55 16 33	2737	53 40 42	2747	52 5 5	2757	50 29 41	2768
	Antares E.	60 20 27	2301	58 34 29	2308	56 48 41	2315	55 3 3	2322
	MARS E.	70 31 44	2545	68 51 34	2553	67 11 35	2561	65 31 46	2568
	SUN E.	98 22 21	2636	96 44 15	2643	95 6 19	2651	93 28 33	2657
7	Pollux W.	90 32 38	2363	92 17 6	2370	94 1 24	2377	95 45 32	2384
	JUPITER W.	75 41 55	2321	77 27 24	2328	79 12 42	2335	80 57 50	2342
	Regulus W.	53 38 8	2356	55 22 46	2364	57 7 13	2371	58 51 30	2378
	VENUS E.	42 36 19	2827	41 2 26	2840	39 28 50	2855	37 55 33	2869
	Antares E.	46 17 24	2357	44 32 47	2364	42 48 20	2371	41 4 4	2378
	MARS E.	57 15 20	2608	55 36 36	2617	53 58 4	2625	52 19 43	2634
	SUN E.	85 22 9	2695	83 45 23	2703	82 8 47	2710	80 32 21	2719

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8	JUPITER W.	82 42 48	2349	84 27 36	2357	86 12 13	2364	87 56 40	2371
	Regulus W.	60 35 36	2385	62 19 32	2392	64 3 18	2400	65 46 53	2407
	Antares E.	39 19 58	2386	37 36 3	2393	35 52 18	2401	34 8 44	2408
	MARS E.	50 41 34	2643	49 3 37	2652	47 25 52	2660	45 48 19	2669
	SUN E.	78 56 6	2726	77 20 1	2735	75 44 7	2742	74 8 23	2750
9	JUPITER W.	96 36 17	2408	98 19 41	2415	100 2 55	2422	101 45 59	2429
	Regulus W.	74 22 12	2444	76 4 44	2451	77 47 6	2459	79 29 17	2467
	MARS E.	37 43 46	2719	36 7 32	2731	34 31 33	2742	32 55 49	2754
	SUN E.	66 12 23	2791	64 37 43	2798	63 3 13	2808	61 28 55	2815
10	Regulus W.	87 57 34	2504	89 38 42	2512	91 19 39	2519	93 0 26	2527
	Spica W.	33 58 23	2510	35 39 22	2517	37 20 11	2524	39 0 51	2532
	SUN E.	53 40 5	2858	52 6 52	2866	50 33 50	2875	49 0 59	2884
11	Regulus W.	101 21 40	2565	103 1 23	2573	104 40 55	2581	106 20 16	2589
	Spica W.	47 21 34	2569	49 1 12	2577	50 40 39	2585	52 19 55	2592
	SUN E.	41 19 37	2930	39 47 56	2939	38 16 27	2949	36 45 10	2959
12	Spica W.	60 33 35	2632	62 11 46	2640	63 49 46	2649	65 27 35	2657
	SATURN W.	36 17 58	2749	37 53 33	2750	39 29 6	2753	41 4 36	2756
	SUN E.	29 12 3	3014	27 42 7	3026	26 12 27	3039	24 43 3	3053
16	SUN W.	17 58 54	3362	19 21 54	3361	20 44 55	3363	22 7 54	3365
	♈ Arietis E.	82 50 0	2934	81 18 24	2942	79 46 58	2950	78 15 43	2959
	Aldebaran E.	114 12 41	3004	112 42 33	3010	111 12 33	3017	109 42 41	3023
17	SUN W.	29 1 43	3390	30 24 11	3395	31 46 33	3401	33 8 48	3407
	♈ Arietis E.	70 42 7	3001	69 11 55	3008	67 41 52	3016	66 11 59	3023
	Aldebaran E.	102 15 28	3057	100 46 26	3064	99 17 32	3071	97 48 47	3077
18	SUN W.	39 58 26	3435	41 20 3	3439	42 41 35	3445	44 3 1	3449
	♈ Arietis E.	58 44 48	3058	57 15 47	3065	55 46 54	3071	54 18 9	3077
	Aldebaran E.	90 26 55	3108	88 58 55	3113	87 31 1	3119	86 3 14	3124
19	SUN W.	50 49 1	3467	52 10 2	3471	53 30 59	3472	54 51 54	3475
	♈ Arietis E.	46 56 6	3104	45 28 1	3108	44 0 1	3113	42 32 7	3117
	Aldebaran E.	78 45 47	3146	77 18 33	3150	75 51 24	3153	74 24 19	3158
20	SUN W.	61 36 5	3478	62 56 54	3477	64 17 44	3476	65 38 35	3474
	Fomalhaut W.	37 0 22	3985	38 12 16	3927	39 25 8	3975	40 38 53	3926
	Aldebaran E.	67 9 49	3169	65 43 3	3172	64 16 20	3173	62 49 38	3174
21	SUN W.	72 23 28	3459	73 44 38	3454	75 5 53	3449	76 27 14	3443
	Fomalhaut W.	46 58 50	3639	48 16 42	3609	49 35 7	3580	50 54 3	3554
	Aldebaran E.	55 36 30	3178	54 9 55	3178	52 43 20	3178	51 16 45	3179
	Pollux E.	97 57 39	3070	96 28 53	3066	95 0 2	3061	93 31 5	3056
22	SUN W.	83 15 47	3408	84 37 55	3399	86 0 13	3390	87 22 41	3380
	Fomalhaut W.	57 35 37	3437	58 57 12	3416	60 19 10	3396	61 41 31	3376
	Aldebaran E.	44 3 59	3183	42 37 29	3184	41 11 1	3187	39 44 36	3190
	Pollux E.	86 4 37	3024	84 34 54	3017	83 5 2	3008	81 34 59	3000

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8	JUPITER W.	89 40 56	2378	91 25 2	2386	93 8 57	2393	94 52 42	2400
	Regulus W.	67 30 18	2415	69 13 32	2422	70 56 36	2429	72 39 29	2436
	Antares E.	32 25 20	2415	30 42 7	2423	28 59 5	2430	27 16 13	2438
	MARS E.	44 10 58	2679	42 33 50	2689	40 56 55	2699	39 20 14	2709
	SUN E.	72 32 50	2758	70 57 27	2766	69 22 15	2775	67 47 14	2782
9	JUPITER W.	103 28 52	2437	105 11 34	2444	106 54 6	2452	108 36 27	2459
	Regulus W.	81 11 17	2474	82 53 7	2481	84 34 47	2489	86 16 16	2497
	MARS E.	31 20 21	2767	29 45 10	2781	28 10 17	2795	26 35 43	2810
	SUN E.	59 54 47	2824	58 20 50	2832	56 47 4	2841	55 13 29	2849
10	Regulus W.	94 41 2	2535	96 21 27	2542	98 1 42	2550	99 41 46	2557
	Spica W.	40 41 20	2539	42 21 39	2546	44 1 48	2554	45 41 46	2561
	SUN E.	47 28 20	2893	45 55 52	2901	44 23 35	2911	42 51 30	2920
11	Regulus W.	107 59 26	2596	109 38 26	2605	111 17 14	2613	112 55 51	2621
	Spica W.	53 59 1	2600	55 37 56	2608	57 16 40	2616	58 55 13	2624
	SUN E.	35 14 6	2969	33 43 15	2980	32 12 37	2991	30 42 13	3002
12	Spica W.	67 5 12	2666	68 42 38	2675	70 19 52	2683	71 56 55	2691
	SATURN W.	42 40 1	2760	44 15 21	2764	45 50 36	2769	47 25 44	2775
	SUN E.	23 13 56	3069	21 45 8	3084	20 16 39	3102	18 48 32	3122
16	SUN W.	23 30 50	3369	24 53 42	3374	26 16 28	3379	27 39 9	3385
	α Arietis E.	76 44 39	2967	75 13 45	2976	73 43 2	2984	72 12 29	2993
	Aldebaran E.	108 12 57	3030	106 43 22	3038	105 13 56	3044	103 44 38	3051
17	SUN W.	34 30 57	3413	35 52 59	3419	37 14 54	3424	38 36 43	3430
	α Arietis E.	64 42 15	3030	63 12 40	3038	61 43 14	3045	60 13 57	3052
	Aldebaran E.	96 20 9	3083	94 51 39	3090	93 23 17	3096	91 55 2	3102
18	SUN W.	45 24 22	3454	46 45 38	3457	48 6 50	3461	49 27 58	3465
	α Arietis E.	52 49 31	3082	51 21 0	3087	49 52 35	3093	48 24 17	3099
	Aldebaran E.	84 35 33	3129	83 7 58	3133	81 40 29	3138	80 13 5	3143
19	SUN W.	56 12 46	3476	57 33 37	3477	58 54 27	3478	60 15 16	3478
	α Arietis E.	41 4 18	3121	39 36 34	3126	38 8 56	3130	36 41 23	3133
	Aldebaran E.	72 57 19	3160	71 30 22	3163	70 3 28	3165	68 36 37	3168
20	SUN W.	66 59 28	3472	68 20 23	3470	69 41 21	3466	71 2 23	3463
	Fomalhaut W.	41 53 28	3783	43 8 48	3743	44 24 50	3705	45 41 32	3671
	Aldebaran E.	61 22 58	3175	59 56 19	3177	58 29 42	3178	57 3 6	3178
21	SUN W.	77 48 42	3438	79 10 16	3431	80 31 58	3423	81 53 48	3415
	Fomalhaut W.	52 13 28	3528	53 33 21	3504	54 53 41	3480	56 14 27	3459
	Aldebaran E.	49 50 11	3179	48 23 37	3180	46 57 4	3180	45 30 31	3181
	Pollux E.	92 2 2	3051	90 32 52	3045	89 3 35	3039	87 34 10	3032
22	SUN W.	88 45 20	3370	90 8 11	3359	91 31 14	3348	92 54 30	3336
	Fomalhaut W.	63 4 15	3357	64 27 21	3338	65 50 49	3319	67 14 39	3300
	Aldebaran E.	38 18 15	3194	36 51 59	3200	35 25 50	3207	33 59 49	3216
	Pollux E.	80 4 46	2990	78 34 21	2981	77 3 44	2970	75 32 54	2960

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		° ' "		° ' "		° ' "		° ' "	
23	SUN W.	94 18 0	3325	95 41 43	3311	97 5 42	3298	98 29 56	3285
	Fomalhaut W.	68 38 50	3282	70 3 22	3264	71 28 16	3247	72 53 30	3228
	α Pegasi W.	46 31 24	3351	47 54 36	3321	49 18 23	3292	50 42 44	3265
	Pollux E.	74 1 51	2949	72 30 34	2938	70 59 3	2926	69 27 17	2913
	JUPITER E.	86 52 10	2897	85 19 47	2886	83 47 10	2873	82 14 17	2861
	Regulus E.	110 55 20	2942	109 23 54	2931	107 52 14	2918	106 20 18	2906
24	SUN W.	105 35 12	3210	107 1 9	3194	108 27 25	3178	109 54 1	3161
	Fomalhaut W.	80 4 57	3141	81 32 17	3124	82 59 58	3107	84 27 59	3090
	α Pegasi W.	57 52 33	3133	59 20 2	3109	60 48 1	3085	62 16 29	3062
	Pollux E.	61 44 22	2846	60 10 54	2832	58 37 8	2817	57 3 2	2802
	JUPITER E.	74 25 47	2795	72 51 12	2779	71 16 17	2765	69 41 3	2750
	Regulus E.	98 36 32	2838	97 2 54	2823	95 28 56	2808	93 54 39	2792
25	SUN W.	117 12 10	3073	118 40 53	3055	120 9 58	3035	121 39 27	3017
	α Pegasi W.	69 45 50	2950	71 17 5	2928	72 48 48	2907	74 20 58	2887
	α Arietis W.	26 22 33	2803	27 56 57	2777	29 31 55	2752	31 7 26	2727
	Pollux E.	49 7 31	2722	47 31 21	2707	45 54 50	2690	44 17 57	2673
	JUPITER E.	61 39 44	2669	60 2 23	2653	58 24 40	2636	56 46 34	2619
	Regulus E.	85 58 1	2711	84 21 36	2694	82 44 48	2677	81 7 37	2659
26	α Pegasi W.	82 8 26	2785	83 43 14	2765	85 18 28	2746	86 54 7	2727
	α Arietis W.	39 12 49	2616	40 51 22	2595	42 30 24	2574	44 9 55	2553
	Pollux E.	36 7 53	2590	34 28 44	2574	32 49 13	2557	31 9 19	2542
	JUPITER E.	48 30 9	2531	46 49 39	2514	45 8 45	2496	43 27 26	2479
	Regulus E.	72 55 43	2570	71 16 7	2552	69 36 6	2534	67 55 40	2516
27	α Pegasi W.	94 58 28	2639	96 36 30	2623	98 14 54	2607	99 53 39	2592
	α Arietis W.	52 34 28	2455	54 16 45	2436	55 59 28	2418	57 42 37	2399
	Regulus E.	59 27 11	2426	57 44 13	2408	56 0 50	2391	54 17 2	2373
	Spica E.	113 28 1	2429	111 45 7	2411	110 1 48	2393	108 18 3	2376
28	α Arietis W.	66 24 50	2313	68 10 30	2297	69 56 34	2281	71 43 1	2266
	Aldebaran W.	35 51 55	2511	37 32 53	2479	39 14 36	2449	40 57 1	2421
	Regulus E.	45 31 55	2291	43 45 42	2276	41 59 7	2261	40 12 10	2245
	Spica E.	99 33 15	2294	97 47 6	2276	96 0 34	2265	94 13 40	2248
29	α Arietis W.	80 40 36	2198	82 29 7	2186	84 17 55	2174	86 7 1	2164
	Aldebaran W.	49 38 11	2309	51 23 58	2290	53 10 12	2273	54 56 51	2258
	Spica E.	85 13 54	2181	83 24 58	2170	81 35 45	2159	79 46 15	2148
	SATURN E.	110 56 50	2234	109 9 13	2221	107 21 17	2209	105 33 3	2198
30	α Arietis W.	95 16 15	2119	97 6 45	2113	98 57 25	2107	100 48 14	2101
	Aldebaran W.	63 55 25	2194	65 44 2	2184	67 32 53	2176	69 21 57	2168
	Spica E.	70 34 59	2103	68 44 5	2096	66 53 0	2090	65 1 46	2085
	SATURN E.	96 27 56	2151	94 38 15	2143	92 48 22	2137	90 58 19	2131
31	Aldebaran W.	78 29 48	2142	80 19 43	2139	82 9 42	2132	83 59 43	2127
	Pollux W.	35 21 41	2082	37 13 8	2079	39 4 40	2077	40 56 15	2075
	Spica E.	55 43 45	2067	53 51 55	2065	52 0 2	2064	50 8 8	2064
	SATURN E.	81 46 14	2114	79 55 36	2112	78 4 55	2111	76 14 13	2112
	Antares E.	101 36 14	2065	99 44 18	2062	97 52 20	2061	96 0 20	2061

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		° ' "		° ' "		° ' "		° ' "	
23	SUN W.	99 54 25	3271	101 19 10	3256	102 44 13	3241	104 9 33	3225
	Fomalhaut W.	74 19 6	3210	75 45 3	3193	77 11 20	3176	78 37 58	3158
	α Pegasi W.	52 7 39	3236	53 33 6	3209	54 59 4	3189	56 25 33	3158
	Pollux E.	67 55 15	2901	66 22 57	2888	64 50 23	2874	63 17 31	2861
	JUPITER E.	80 41 9	2848	79 7 44	2836	77 34 3	2822	76 0 4	2808
	Regulus E.	104 48 7	2893	103 15 39	2880	101 42 54	2866	100 9 52	2852
24	SUN W.	111 20 57	3143	112 48 14	3127	114 15 51	3109	115 43 50	3091
	Fomalhaut W.	85 56 21	3073	87 25 4	3056	88 54 7	3040	90 23 30	3023
	α Pegasi W.	63 45 25	3039	65 14 50	3017	66 44 42	2994	68 15 2	2972
	Pollux E.	55 28 37	2787	53 53 52	2771	52 18 46	2755	50 43 19	2739
	JUPITER E.	68 5 29	2734	66 29 34	2719	64 53 19	2702	63 16 42	2687
	Regulus E.	92 20 1	2777	90 45 3	2761	89 9 44	2745	87 34 4	2728
25	SUN W.	123 9 19	2997	124 39 35	2978	126 10 15	2959	127 41 19	2940
	α Pegasi W.	75 53 34	2866	77 26 37	2845	79 0 7	2825	80 34 3	2804
	α Arietis W.	32 43 30	2704	34 20 5	2681	35 57 10	2659	37 34 45	2638
	Pollux E.	42 40 41	2657	41 3 3	2640	39 25 2	2624	37 46 39	2607
	JUPITER E.	55 8 5	2601	53 29 12	2584	51 49 55	2566	50 10 14	2549
	Regulus E.	79 30 2	2648	77 52 4	2624	76 13 41	2606	74 34 54	2588
26	α Pegasi W.	88 30 11	2709	90 6 39	2690	91 43 32	2673	93 20 48	2655
	α Arietis W.	45 49 54	2533	47 30 21	2513	49 11 16	2494	50 52 38	2474
	Pollux E.	29 29 4	2526	27 48 27	2512	26 7 30	2499	24 26 15	2485
	JUPITER E.	41 45 43	2461	40 3 35	2443	38 21 2	2426	36 38 4	2409
	Regulus E.	66 14 49	2498	64 33 33	2480	62 51 51	2462	61 9 44	2443
27	α Pegasi W.	101 32 45	2577	103 12 11	2564	104 51 55	2551	106 31 57	2540
	α Arietis W.	59 26 13	2381	61 10 15	2364	62 54 42	2346	64 39 34	2330
	Regulus E.	52 32 49	2357	50 48 12	2339	49 3 10	2323	47 17 44	2307
	Spica E.	106 33 54	2359	104 49 21	2342	103 4 23	2326	101 19 1	2309
28	α Arietis W.	73 29 50	2252	75 17 0	2237	77 4 32	2224	78 52 24	2210
	Aldebaran W.	42 40 6	2395	44 23 48	2371	46 8 4	2349	47 52 52	2328
	Regulus E.	38 24 50	2231	36 37 9	2218	34 49 8	2204	33 0 47	2192
	Spica E.	92 26 24	2234	90 38 47	2220	88 50 49	2206	87 2 31	2194
29	α Arietis W.	87 56 23	2154	89 46 0	2144	91 35 52	2136	93 25 57	2127
	Aldebaran W.	56 43 53	2243	58 31 17	2229	60 19 1	2216	62 7 4	2204
	Spica E.	77 56 29	2137	76 6 27	2128	74 16 11	2119	72 25 41	2111
	SATURN E.	103 44 32	2127	101 55 45	2116	100 6 42	2107	98 17 25	2109
30	α Arietis W.	102 39 12	2096	104 30 17	2092	106 21 28	2089	108 12 44	2086
	Aldebaran W.	71 11 13	2161	73 0 39	2155	74 50 15	2150	76 39 58	2145
	Spica E.	63 10 23	2079	61 18 52	2075	59 27 15	2072	57 35 32	2069
	SATURN E.	89 8 7	2126	87 17 47	2122	85 27 21	2118	83 36 50	2115
31	Aldebaran W.	85 49 46	2137	87 39 49	2138	89 29 50	2139	91 19 49	2141
	Pollux W.	42 47 53	2074	44 39 32	2074	46 31 11	2075	48 22 48	2077
	Spica E.	48 16 14	2065	46 24 21	2066	44 32 30	2068	42 40 42	2070
	SATURN E.	74 23 32	2113	72 32 52	2115	70 42 15	2117	68 51 42	2120
	Antares E.	94 8 20	2061	92 16 20	2062	90 24 22	2063	88 32 26	2066

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	32	312 11 13.2	11 0.5	152.14	+ 0.01	9.9936745	+27.9	h m s 3 14 39.30
2	33	313 12 4.0	11 51.1	152.10	- 0.13	9.9937427	28.9	3 10 43.38
3	34	314 12 53.9	12 40.9	152.06	0.24	9.9938132	29.8	3 6 47.47
4	35	315 13 43.0	13 29.8	152.02	- 0.35	9.9938859	+30.7	3 2 51.56
5	36	316 14 31.0	14 17.8	151.98	0.44	9.9939607	31.6	2 58 55.65
6	37	317 15 18.2	15 4.8	151.94	0.49	9.9940375	32.5	2 54 59.74
7	38	318 16 4.4	15 50.8	151.90	- 0.51	9.9941160	+33.3	2 51 3.83
8	39	319 16 49.6	16 35.9	151.86	0.52	9.9941962	33.9	2 47 7.92
9	40	320 17 33.7	17 19.8	151.82	0.48	9.9942779	34.4	2 43 12.01
10	41	321 18 16.8	18 2.8	151.77	- 0.43	9.9943610	+34.9	2 39 16.10
11	42	322 18 58.7	18 44.6	151.72	0.34	9.9944453	35.4	2 35 20.19
12	43	323 19 39.3	19 25.1	151.66	0.24	9.9945308	35.8	2 31 24.28
13	44	324 20 18.5	20 4.1	151.60	- 0.12	9.9946173	+36.2	2 27 28.38
14	45	325 20 56.3	20 41.7	151.54	0.00	9.9947048	36.7	2 23 32.47
15	46	326 21 32.6	21 17.9	151.48	+ 0.14	9.9947932	37.1	2 19 36.56
16	47	327 22 7.2	21 52.4	151.41	+ 0.25	9.9948827	+37.5	2 15 40.65
17	48	328 22 40.2	22 25.2	151.34	0.36	9.9949732	37.9	2 11 44.74
18	49	329 23 11.4	22 56.3	151.26	0.45	9.9950648	38.4	2 7 48.83
19	50	330 23 40.8	23 25.5	151.18	+ 0.52	9.9951575	+38.9	2 3 52.92
20	51	331 24 8.3	23 52.9	151.10	0.56	9.9952515	39.4	1 59 57.01
21	52	332 24 33.8	24 18.3	151.02	0.57	9.9953467	39.9	1 56 1.10
22	53	333 24 57.3	24 41.7	150.94	+ 0.54	9.9954433	+40.5	1 52 5.19
23	54	334 25 18.9	25 3.1	150.86	0.49	9.9955413	41.2	1 48 9.28
24	55	335 25 38.7	25 22.8	150.78	0.40	9.9956410	41.9	1 44 13.38
25	56	336 25 56.4	25 40.4	150.70	+ 0.31	9.9957424	+42.6	1 40 17.47
26	57	337 26 12.2	25 56.1	150.62	0.19	9.9958455	43.3	1 36 21.56
27	58	338 26 26.2	26 10.0	150.55	+ 0.07	9.9959503	44.0	1 32 25.65
28	59	339 26 38.4	26 22.0	150.47	- 0.08	9.9960569	44.7	1 28 29.74
29	60	340 26 48.7	26 32.2	150.39	0.21	9.9961653	45.5	1 24 33.83
30	61	341 26 57.3	26 40.7	150.32	- 0.33	9.9962753	+46.2	1 20 37.92
NOTE. - The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st a.								
Diff. for 1 Hour, -9 ^m .8296. (Table II.)								

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	16 33.7	16 32.3	60 40.5	-0.28	60 35.2	-0.59	14 35.9	2.09	17.6
2	16 29.8	16 26.6	60 26.3	0.88	60 14.2	1.12	15 25.6	2.07	18.6
3	16 22.6	16 17.9	59 59.5	1.32	59 42.6	1.48	16 15.5	2.10	19.6
4	16 12.9	16 7.5	59 24.1	-1.59	59 4.3	-1.67	17 6.7	2.18	20.6
5	16 2.0	15 56.4	58 44.0	1.71	58 23.3	1.73	18 0.1	2.27	21.6
6	15 50.7	15 45.2	58 2.6	1.71	57 42.3	1.67	18 55.6	2.35	22.6
7	15 39.8	15 34.6	57 22.5	-1.62	57 3.4	-1.56	19 52.5	2.38	23.6
8	15 29.6	15 24.9	56 45.1	1.48	56 27.8	1.41	20 49.3	2.34	24.6
9	15 20.4	15 16.2	56 11.3	1.34	55 55.7	1.26	21 44.2	2.23	25.6
10	15 12.2	15 8.4	55 41.1	-1.18	55 27.3	-1.11	22 36.0	2.08	26.6
11	15 4.9	15 1.7	55 14.4	1.03	55 2.5	0.96	23 24.0	1.92	27.6
12	14 58.7	14 55.9	54 51.4	0.89	54 41.2	0.81	6		28.6
13	14 53.4	14 51.1	54 31.9	-0.73	54 23.6	-0.65	0 8.5	1.79	29.6
14	14 49.1	14 47.5	54 16.4	0.55	54 10.3	0.45	0 50.2	1.69	0.8
15	14 46.2	14 45.2	54 5.5	0.34	54 2.1	-0.23	1 30.0	1.63	1.8
16	14 44.7	14 44.6	54 0.1	-0.10	53 59.8	+0.05	2 8.9	1.61	2.8
17	14 45.0	14 45.9	54 1.3	+0.20	54 4.7	0.37	2 47.9	1.64	3.8
18	14 47.4	14 49.5	54 10.1	0.54	54 17.7	0.73	3 28.1	1.71	4.8
19	14 52.2	14 55.5	54 27.5	+0.92	54 39.7	+1.11	4 10.5	1.83	5.8
20	14 59.4	15 4.0	54 54.2	1.31	55 11.1	1.50	4 56.2	1.98	6.8
21	15 9.3	15 15.1	55 30.3	1.70	55 51.8	1.88	5 45.9	2.16	7.8
22	15 21.6	15 28.5	56 15.5	+2.05	56 40.9	+2.19	6 39.7	2.32	8.8
23	15 35.9	15 43.6	57 8.0	2.31	57 36.4	2.39	7 37.1	2.44	9.8
24	15 51.5	15 59.5	58 5.4	2.43	58 34.7	2.43	8 36.4	2.48	10.8
25	16 7.4	16 15.0	59 3.7	+2.37	59 31.6	+2.25	9 35.7	2.44	11.8
26	16 22.0	16 28.4	59 57.6	2.06	60 21.1	1.83	10 33.2	2.35	12.8
27	16 34.0	16 38.5	60 41.4	1.53	60 57.9	1.19	11 28.4	2.25	13.8
28	16 41.7	16 43.7	61 9.9	+0.80	61 17.2	+0.40	12 21.3	2.17	14.8
29	16 44.3	16 43.6	61 19.4	-0.02	61 16.7	-0.43	13 13.0	2.14	15.8
30	16 41.5	16 38.2	61 9.2	-0.82	60 57.1	-1.18	14 4.6	2.17	16.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 1.					MONDAY 3.				
0	10 50 57.89	2.2182	N. 6 33 10.2	17.246	0	12 35 26.68	2.1677	S. 7 18 3.0	16.709
1	10 53 10.89	2.2152	6 15 54.5	17.277	1	12 37 36.77	2.1687	7 34 44.0	16.656
2	10 55 23.71	2.2122	5 58 37.0	17.307	2	12 39 46.92	2.1697	7 51 21.7	16.601
3	10 57 36.35	2.2093	5 41 17.7	17.335	3	12 41 57.13	2.1708	8 7 56.1	16.545
4	10 59 48.82	2.2065	5 23 56.8	17.361	4	12 44 7.41	2.1720	8 24 27.1	16.487
5	11 2 1.13	2.2039	5 6 34.4	17.385	5	12 46 17.77	2.1733	8 40 54.6	16.428
6	11 4 13.29	2.2013	4 49 10.6	17.407	6	12 48 28.21	2.1747	8 57 18.5	16.367
7	11 6 25.29	2.1987	4 31 45.5	17.427	7	12 50 38.74	2.1762	9 13 38.7	16.305
8	11 8 37.14	2.1962	4 14 19.3	17.446	8	12 52 49.36	2.1777	9 29 55.1	16.242
9	11 10 48.84	2.1938	3 56 52.0	17.462	9	12 55 0.06	2.1792	9 46 7.7	16.177
10	11 13 0.40	2.1916	3 39 23.8	17.477	10	12 57 10.86	2.1809	10 2 16.3	16.109
11	11 15 11.83	2.1894	3 21 54.8	17.490	11	12 59 21.77	2.1826	10 18 20.8	16.041
12	11 17 23.13	2.1872	3 4 25.0	17.501	12	13 1 32.78	2.1844	10 34 21.2	15.972
13	11 19 34.30	2.1852	2 46 54.7	17.509	13	13 3 43.90	2.1863	10 50 17.4	15.901
14	11 21 45.36	2.1833	2 29 23.9	17.517	14	13 5 55.14	2.1883	11 6 9.3	15.827
15	11 23 56.30	2.1814	2 11 52.7	17.522	15	13 8 6.50	2.1905	11 21 56.7	15.752
16	11 26 7.13	2.1797	1 54 21.2	17.526	16	13 10 17.98	2.1924	11 37 39.6	15.677
17	11 28 17.86	2.1780	1 36 49.6	17.527	17	13 12 29.59	2.1945	11 53 18.0	15.601
18	11 30 28.49	2.1763	1 19 18.0	17.526	18	13 14 41.32	2.1967	12 8 51.7	15.522
19	11 32 39.02	2.1748	1 1 46.5	17.524	19	13 16 53.19	2.1990	12 24 20.7	15.442
20	11 34 49.47	2.1734	0 44 15.1	17.521	20	13 19 5.20	2.2014	12 39 44.8	15.362
21	11 36 59.83	2.1720	0 26 44.0	17.515	21	13 21 17.36	2.2038	12 55 4.0	15.276
22	11 39 10.11	2.1708	N. 0 9 13.3	17.507	22	13 23 29.66	2.2062	13 10 18.2	15.194
23	11 41 20.32	2.1697	S. 0 8 16.9	17.497	23	13 25 42.11	2.2087	S. 13 25 27.3	15.108
SUNDAY 2.					TUESDAY 4.				
0	11 43 30.47	2.1686	S. 0 25 46.4	17.486	0	13 27 54.71	2.2113	S. 13 40 31.2	15.022
1	11 45 40.55	2.1675	0 43 15.2	17.473	1	13 30 7.47	2.2140	13 55 29.9	14.933
2	11 47 50.57	2.1666	1 0 43.2	17.459	2	13 32 20.39	2.2167	14 10 23.2	14.842
3	11 50 0.54	2.1657	1 18 10.3	17.443	3	13 34 33.47	2.2194	14 25 11.0	14.751
4	11 52 10.46	2.1650	1 35 36.4	17.425	4	13 36 46.71	2.2222	14 39 53.3	14.659
5	11 54 20.34	2.1643	1 53 1.3	17.405	5	13 39 0.13	2.2251	14 54 30.1	14.566
6	11 56 30.18	2.1637	2 10 25.0	17.383	6	13 41 13.72	2.2279	15 9 1.2	14.470
7	11 58 39.99	2.1632	2 27 47.3	17.360	7	13 43 27.48	2.2308	15 23 26.5	14.373
8	12 0 49.77	2.1628	2 45 8.2	17.336	8	13 45 41.42	2.2338	15 37 46.0	14.276
9	12 2 59.53	2.1625	3 2 27.6	17.309	9	13 47 55.54	2.2369	15 51 59.6	14.177
10	12 5 9.27	2.1622	3 19 45.3	17.280	10	13 50 9.85	2.2400	16 6 7.2	14.076
11	12 7 19.00	2.1621	3 37 1.2	17.249	11	13 52 24.34	2.2431	16 20 8.7	13.974
12	12 9 28.72	2.1620	3 54 15.2	17.217	12	13 54 39.02	2.2463	16 34 4.1	13.871
13	12 11 38.44	2.1621	4 11 27.3	17.184	13	13 56 53.89	2.2495	16 47 53.2	13.766
14	12 13 48.17	2.1622	4 28 37.3	17.149	14	13 59 8.96	2.2527	17 1 36.0	13.661
15	12 15 57.90	2.1623	4 45 45.2	17.112	15	14 1 24.22	2.2560	17 15 12.5	13.554
16	12 18 7.64	2.1626	5 2 50.8	17.074	16	14 3 39.68	2.2593	17 28 42.5	13.446
17	12 20 17.41	2.1630	5 19 54.1	17.035	17	14 5 55.34	2.2627	17 42 6.0	13.336
18	12 22 27.20	2.1634	5 36 55.0	16.993	18	14 8 11.20	2.2660	17 55 22.8	13.224
19	12 24 37.02	2.1639	5 53 53.3	16.949	19	14 10 27.26	2.2694	18 8 32.9	13.112
20	12 26 46.87	2.1644	6 10 48.9	16.904	20	14 12 43.53	2.2729	18 21 36.3	12.999
21	12 28 56.75	2.1650	6 27 41.8	16.857	21	14 15 0.01	2.2764	18 34 32.8	12.884
22	12 31 6.67	2.1658	6 44 31.8	16.809	22	14 17 16.70	2.2799	18 47 22.4	12.769
23	12 33 16.65	2.1667	7 1 18.9	16.760	23	14 19 33.60	2.2833	19 0 5.1	12.652
24	12 35 26.68	2.1677	S. 7 18 3.0	16.709	24	14 21 50.70	2.2868	S. 19 12 40.7	12.534

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 5.					FRIDAY 7.				
0	14 21 50.70	2.2868	S. 19 12 40.7	12.534	0	16 15 33.07	2.4374	S. 26 38 1.8	3.681
1	14 24 8.02	2.2904	19 25 9.2	12.415	1	16 17 59.37	2.4393	26 43 37.8	3.519
2	14 26 25.55	2.2940	19 37 30.5	12.294	2	16 20 25.78	2.4411	26 49 4.1	3.358
3	14 28 43.30	2.2976	19 49 44.5	12.172	3	16 22 52.30	2.4427	26 54 20.8	3.196
4	14 31 1.26	2.3012	20 1 51.1	12.049	4	16 25 18.91	2.4442	26 59 27.7	3.033
5	14 33 19.44	2.3047	20 13 50.4	11.926	5	16 27 45.60	2.4457	27 4 24.8	2.871
6	14 35 37.83	2.3083	20 25 42.2	11.800	6	16 30 12.38	2.4470	27 9 12.2	2.708
7	14 37 56.44	2.3120	20 37 26.4	11.673	7	16 32 39.24	2.4482	27 13 49.8	2.545
8	14 40 15.27	2.3157	20 49 3.0	11.546	8	16 35 6.17	2.4494	27 18 17.6	2.381
9	14 42 34.32	2.3192	21 0 32.0	11.418	9	16 37 33.17	2.4505	27 22 35.5	2.217
10	14 44 53.58	2.3228	21 11 53.2	11.288	10	16 40 0.23	2.4514	27 26 43.6	2.052
11	14 47 13.06	2.3265	21 23 6.6	11.157	11	16 42 27.34	2.4522	27 30 41.8	1.887
12	14 49 32.76	2.3301	21 34 12.1	11.025	12	16 44 54.50	2.4530	27 34 30.1	1.722
13	14 51 52.67	2.3337	21 45 9.6	10.892	13	16 47 21.70	2.4537	27 38 8.5	1.557
14	14 54 12.80	2.3373	21 55 59.2	10.759	14	16 49 48.94	2.4542	27 41 37.0	1.392
15	14 56 33.15	2.3409	22 6 40.7	10.624	15	16 52 16.21	2.4547	27 44 55.7	1.228
16	14 58 53.71	2.3444	22 17 14.1	10.488	16	16 54 43.50	2.4550	27 48 4.4	1.063
17	15 1 14.48	2.3480	22 27 39.3	10.351	17	16 57 10.81	2.4552	27 51 3.2	0.897
18	15 3 35.47	2.3516	22 37 56.2	10.212	18	16 59 38.13	2.4553	27 53 52.1	0.732
19	15 5 56.67	2.3551	22 48 4.8	10.073	19	17 2 5.45	2.4552	27 56 31.1	0.567
20	15 8 18.08	2.3585	22 58 5.0	9.933	20	17 4 32.76	2.4552	27 59 0.1	0.401
21	15 10 39.69	2.3619	23 7 56.8	9.792	21	17 7 0.07	2.4550	28 1 19.2	0.236
22	15 13 1.51	2.3654	23 17 40.1	9.651	22	17 9 27.36	2.4546	28 3 28.4	0.070
23	15 15 23.54	2.3688	S. 23 27 14.9	9.507	23	17 11 54.62	2.4541	S. 28 5 27.6	1.904
THURSDAY 6.					SATURDAY 8.				
0	15 17 45.77	2.3722	S. 23 36 41.0	9.363	0	17 14 21.85	2.4535	S. 28 7 16.9	1.739
1	15 20 8.20	2.3755	23 45 58.5	9.219	1	17 16 49.04	2.4528	28 8 56.3	1.574
2	15 22 30.83	2.3788	23 55 7.3	9.073	2	17 19 16.19	2.4521	28 10 25.8	1.409
3	15 24 53.66	2.3821	24 4 7.3	8.927	3	17 21 43.29	2.4512	28 11 45.4	1.244
4	15 27 16.68	2.3853	24 12 58.5	8.780	4	17 24 10.33	2.4502	28 12 55.1	1.079
5	15 29 39.90	2.3886	24 21 40.9	8.632	5	17 26 37.30	2.4490	28 13 54.9	0.915
6	15 32 3.31	2.3917	24 30 14.4	8.483	6	17 29 4.20	2.4477	28 14 44.9	0.751
7	15 34 26.90	2.3948	24 38 38.9	8.333	7	17 31 31.02	2.4463	28 15 25.0	0.587
8	15 36 50.68	2.3978	24 46 54.4	8.182	8	17 33 57.76	2.4448	28 15 55.3	0.423
9	15 39 14.64	2.4008	24 55 0.8	8.031	9	17 36 24.40	2.4432	28 16 15.8	0.259
10	15 41 38.77	2.4037	25 2 58.1	7.879	10	17 38 50.94	2.4415	28 16 26.5	- 0.097
11	15 44 3.08	2.4066	25 10 46.3	7.726	11	17 41 17.38	2.4397	28 16 27.4	+ 0.066
12	15 46 27.56	2.4093	25 18 25.3	7.572	12	17 43 43.70	2.4377	28 16 18.6	0.202
13	15 48 52.20	2.4121	25 25 55.0	7.418	13	17 46 9.90	2.4357	28 16 0.0	0.392
14	15 51 17.01	2.4148	25 33 15.5	7.264	14	17 48 35.98	2.4335	28 15 31.7	0.552
15	15 53 41.98	2.4174	25 40 26.7	7.108	15	17 51 1.92	2.4312	28 14 53.8	0.713
16	15 56 7.10	2.4199	25 47 28.5	6.952	16	17 53 27.72	2.4288	28 14 6.2	0.873
17	15 58 32.37	2.4223	25 54 20.9	6.795	17	17 55 53.37	2.4263	28 13 9.0	1.033
18	16 0 57.78	2.4247	26 1 3.9	6.637	18	17 58 18.87	2.4237	28 12 2.2	1.193
19	16 3 23.33	2.4270	26 7 37.4	6.479	19	18 0 44.21	2.4209	28 10 45.8	1.352
20	16 5 49.02	2.4293	26 14 1.4	6.321	20	18 3 9.38	2.4181	28 9 19.9	1.511
21	16 8 14.85	2.4316	26 20 15.9	6.162	21	18 5 34.38	2.4152	28 7 44.5	1.669
22	16 10 40.81	2.4336	26 26 20.8	6.002	22	18 7 59.20	2.4122	28 5 59.6	1.826
23	16 13 6.88	2.4355	26 32 16.1	5.842	23	18 10 23.83	2.4090	28 4 5.4	1.982
24	16 15 33.07	2.4374	S. 26 38 1.8	5.681	24	18 12 48.28	2.4058	S. 28 2 1.8	2.138

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 9.					TUESDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	18 12 48.28	2.4058	S.28 2 1.8	2.138	1	20 3 1.83	2.1658	S.23 35 50.4	8.564
2	18 15 12.53	2.4024	27 59 48.9	2.293	2	20 5 11.60	2.1599	23 27 13.3	8.672
3	18 17 36.57	2.3989	27 57 26.6	2.449	3	20 7 21.02	2.1540	23 18 29.8	8.776
4	18 20 0.40	2.3953	27 54 55.0	2.603	4	20 9 30.08	2.1481	23 9 40.0	8.883
5	18 22 24.01	2.3917	27 52 14.2	2.756	5	20 11 38.79	2.1422	23 0 43.9	8.987
6	18 24 47.41	2.3881	27 49 24.3	2.909	6	20 13 47.14	2.1362	22 51 41.6	9.089
7	18 27 10.58	2.3842	27 46 25.2	3.061	7	20 15 55.13	2.1302	22 42 33.2	9.191
8	18 29 33.51	2.3803	27 43 17.0	3.212	8	20 18 2.77	2.1243	22 33 18.7	9.291
9	18 31 56.21	2.3763	27 39 59.8	3.362	9	20 20 10.05	2.1184	22 23 58.3	9.389
10	18 34 18.67	2.3722	27 36 33.6	3.511	10	20 22 16.98	2.1126	22 14 32.0	9.487
11	18 36 40.88	2.3681	27 32 58.5	3.659	11	20 24 23.56	2.1067	22 4 59.8	9.585
12	18 39 2.84	2.3638	27 29 14.5	3.807	12	20 26 29.78	2.1008	21 55 21.8	9.680
13	18 41 24.54	2.3595	27 25 21.6	3.955	13	20 28 35.65	2.0949	21 45 38.2	9.774
14	18 43 45.98	2.3551	27 21 19.9	4.101	14	20 30 41.17	2.0891	21 35 48.9	9.868
15	18 46 7.15	2.3505	27 17 9.5	4.245	15	20 32 46.34	2.0832	21 25 54.0	9.960
16	18 48 28.04	2.3459	27 12 50.5	4.388	16	20 34 51.15	2.0773	21 15 53.7	10.050
17	18 50 48.66	2.3413	27 8 22.9	4.532	17	20 36 55.61	2.0715	21 5 48.0	10.140
18	18 53 9.00	2.3366	27 3 46.7	4.675	18	20 38 59.73	2.0658	20 55 36.9	10.229
19	18 55 29.05	2.3318	26 59 1.9	4.817	19	20 41 3.51	2.0601	20 45 20.5	10.317
20	18 57 48.81	2.3269	26 54 8.7	4.957	20	20 43 6.94	2.0543	20 34 58.9	10.403
21	19 0 8.28	2.3221	26 49 7.1	5.096	21	20 45 10.03	2.0486	20 24 32.2	10.488
22	19 2 27.46	2.3171	26 43 57.2	5.234	22	20 47 12.77	2.0428	20 14 0.4	10.572
23	19 4 46.33	2.3119	26 38 39.0	5.372	23	20 49 15.17	2.0372	20 3 23.6	10.655
24	19 7 4.89	2.3068	S.26 33 12.6	5.508	24	20 51 17.24	2.0316	S.19 52 41.8	10.737
MONDAY 10.					WEDNESDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	19 9 23.15	2.3017	S.26 27 38.0	5.644	1	20 53 18.97	2.0260	S.19 41 55.2	10.817
2	19 11 41.10	2.2965	26 21 55.3	5.778	2	20 55 20.36	2.0202	19 31 3.8	10.896
3	19 13 58.73	2.2912	26 16 4.6	5.911	3	20 57 21.42	2.0149	19 20 7.7	10.974
4	19 16 16.04	2.2858	26 10 6.0	6.043	4	20 59 22.15	2.0094	19 9 6.9	11.052
5	19 18 33.03	2.2804	26 3 59.5	6.174	5	21 1 22.55	2.0040	18 58 1.5	11.128
6	19 20 49.69	2.2750	25 57 45.1	6.305	6	21 3 22.63	1.9986	18 46 51.6	11.203
7	19 23 6.03	2.2696	25 51 22.9	6.434	7	21 5 22.38	1.9932	18 35 37.2	11.277
8	19 25 22.04	2.2640	25 44 53.0	6.562	8	21 7 21.81	1.9878	18 24 18.4	11.349
9	19 27 37.71	2.2584	25 38 15.5	6.689	9	21 9 20.92	1.9825	18 12 55.3	11.420
10	19 29 53.05	2.2528	25 31 30.4	6.815	10	21 11 19.71	1.9773	18 1 28.0	11.490
11	19 32 8.05	2.2472	25 24 37.7	6.940	11	21 13 18.19	1.9721	17 49 56.5	11.560
12	19 34 22.72	2.2416	25 17 37.6	7.062	12	21 15 16.36	1.9669	17 38 20.8	11.628
13	19 36 37.05	2.2359	25 10 30.2	7.184	13	21 17 14.21	1.9617	17 26 41.1	11.695
14	19 38 51.03	2.2302	25 3 15.5	7.306	14	21 19 11.76	1.9566	17 14 57.4	11.762
15	19 41 4.67	2.2244	24 55 53.5	7.427	15	21 21 9.00	1.9515	17 3 9.7	11.827
16	19 43 17.96	2.2186	24 48 24.3	7.546	16	21 23 5.94	1.9465	16 51 18.2	11.890
17	19 45 30.90	2.2128	24 40 48.0	7.663	17	21 25 2.58	1.9416	16 39 22.9	11.953
18	19 47 43.50	2.2071	24 33 4.7	7.780	18	21 26 58.93	1.9367	16 27 23.8	12.015
19	19 49 55.75	2.2012	24 25 14.4	7.896	19	21 28 54.98	1.9318	16 15 21.1	12.075
20	19 52 7.65	2.1953	24 17 17.2	8.010	20	21 30 50.74	1.9270	16 3 14.8	12.135
21	19 54 19.19	2.1894	24 9 13.2	8.122	21	21 32 46.22	1.9222	15 51 4.9	12.194
22	19 56 30.38	2.1836	24 1 2.5	8.234	22	21 34 41.41	1.9175	15 38 51.5	12.252
23	19 58 41.22	2.1777	23 52 45.1	8.346	23	21 36 36.32	1.9128	15 26 34.7	12.308
24	20 0 51.70	2.1717	23 44 21.0	8.456	24	21 38 30.95	1.9082	15 14 14.5	12.365
	20 3 1.83	2.1658	S.23 35 50.4	8.564		21 40 25.30	1.9036	S.15 1 51.1	12.421

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 13.					SATURDAY 15.				
0	21 40 25.30	1.9036	S. 15 1 51.1	12.418	0	23 7 38.93	1.7548	S. 4 21 2.1	13.942
1	21 42 19.38	1.8992	14 49 24.4	12.472	1	23 9 24.17	1.7532	4 7 5.2	13.953
2	21 44 13.20	1.8947	14 36 54.5	12.524	2	23 11 9.32	1.7517	3 53 7.7	13.964
3	21 46 6.75	1.8902	14 24 21.5	12.576	3	23 12 54.38	1.7503	3 39 9.5	13.974
4	21 48 0.03	1.8859	14 11 45.4	12.627	4	23 14 39.36	1.7491	3 25 10.8	13.983
5	21 49 53.06	1.8817	13 59 6.3	12.676	5	23 16 24.27	1.7478	3 11 11.6	13.991
6	21 51 45.83	1.8774	13 46 24.3	12.724	6	23 18 9.10	1.7466	2 57 11.9	13.998
7	21 53 38.35	1.8732	13 33 39.4	12.772	7	23 19 53.86	1.7455	2 43 11.8	14.004
8	21 55 30.62	1.8691	13 20 51.7	12.818	8	23 21 38.56	1.7444	2 29 11.4	14.010
9	21 57 22.64	1.8650	13 8 1.2	12.864	9	23 23 23.19	1.7433	2 15 10.6	14.015
10	21 59 14.42	1.8610	12 55 8.0	12.908	10	23 25 7.76	1.7423	2 1 9.6	14.019
11	22 1 5.96	1.8571	12 42 12.2	12.951	11	23 26 52.29	1.7417	1 47 8.3	14.023
12	22 2 57.27	1.8532	12 29 13.8	12.991	12	23 28 36.77	1.7409	1 33 6.8	14.027
13	22 4 48.35	1.8494	12 16 12.9	13.037	13	23 30 21.20	1.7402	1 19 5.1	14.032
14	22 6 39.20	1.8456	12 3 9.4	13.078	14	23 32 5.59	1.7395	1 5 3.4	14.039
15	22 8 29.82	1.8418	11 50 3.5	13.117	15	23 33 49.94	1.7388	0 51 1.6	14.050
16	22 10 20.22	1.8382	11 36 55.3	13.156	16	23 35 34.25	1.7383	0 36 59.8	14.059
17	22 12 10.41	1.8346	11 23 44.8	13.194	17	23 37 18.54	1.7379	0 22 58.0	14.069
18	22 14 0.38	1.8311	11 10 32.0	13.232	18	23 39 2.80	1.7375	S. 0 8 56.3	14.077
19	22 15 50.14	1.8277	10 57 17.0	13.269	19	23 40 47.04	1.7372	N. 0 5 5.3	14.085
20	22 17 39.70	1.8242	10 43 59.9	13.303	20	23 42 31.27	1.7370	0 19 6.7	14.089
21	22 19 29.05	1.8208	10 30 40.7	13.338	21	23 44 15.48	1.7368	0 33 8.0	14.089
22	22 21 18.20	1.8176	10 17 19.4	13.371	22	23 45 59.68	1.7367	0 47 9.0	14.084
23	22 23 7.16	1.8144	S. 10 3 56.2	13.403	23	23 47 43.88	1.7367	N. 1 1 9.7	14.082
FRIDAY 14.					SUNDAY 16.				
0	22 24 55.93	1.8113	S. 9 50 31.1	13.434	0	23 49 28.09	1.7368	N. 1 15 10.0	14.082
1	22 26 44.51	1.8082	9 37 4.1	13.466	1	23 51 12.30	1.7368	1 29 10.0	13.996
2	22 28 32.91	1.8051	9 23 35.2	13.496	2	23 52 56.51	1.7369	1 43 9.6	13.989
3	22 30 21.12	1.8021	9 10 4.6	13.524	3	23 54 40.73	1.7372	1 57 8.7	13.981
4	22 32 9.16	1.7992	8 56 32.3	13.553	4	23 56 24.97	1.7375	2 11 7.3	13.972
5	22 33 57.03	1.7964	8 42 58.3	13.581	5	23 58 9.23	1.7379	2 25 5.4	13.963
6	22 35 44.73	1.7936	8 29 22.6	13.608	6	23 59 53.52	1.7383	2 39 2.9	13.953
7	22 37 32.26	1.7908	8 15 45.4	13.633	7	0 1 37.83	1.7388	2 52 59.7	13.942
8	22 39 19.63	1.7882	8 2 6.7	13.658	8	0 3 22.18	1.7394	3 6 55.9	13.931
9	22 41 6.85	1.7857	7 48 26.5	13.682	9	0 5 6.56	1.7400	3 20 51.4	13.918
10	22 42 53.91	1.7832	7 34 44.9	13.704	10	0 6 50.98	1.7408	3 34 46.1	13.905
11	22 44 40.83	1.7807	7 21 2.0	13.726	11	0 8 35.45	1.7416	3 48 40.0	13.892
12	22 46 27.60	1.7782	7 7 17.8	13.747	12	0 10 19.97	1.7424	4 2 33.1	13.877
13	22 48 14.22	1.7759	6 53 32.3	13.768	13	0 12 4.54	1.7433	4 16 25.3	13.862
14	22 50 0.71	1.7737	6 39 45.6	13.788	14	0 13 49.17	1.7443	4 30 16.5	13.846
15	22 51 47.07	1.7716	6 25 57.7	13.807	15	0 15 33.86	1.7453	4 44 6.8	13.829
16	22 53 33.30	1.7694	6 12 8.7	13.826	16	0 17 18.61	1.7465	4 57 56.0	13.812
17	22 55 19.40	1.7673	5 58 18.6	13.843	17	0 19 3.44	1.7477	5 11 44.2	13.794
18	22 57 5.38	1.7653	5 44 27.5	13.860	18	0 20 48.34	1.7489	5 25 31.3	13.775
19	22 58 51.24	1.7634	5 30 35.4	13.876	19	0 22 33.31	1.7502	5 39 17.2	13.756
20	23 0 36.99	1.7616	5 16 42.4	13.891	20	0 24 18.37	1.7517	5 53 2.0	13.737
21	23 2 22.63	1.7598	5 2 48.5	13.905	21	0 26 3.52	1.7532	6 6 45.6	13.716
22	23 4 8.16	1.7580	4 48 53.8	13.918	22	0 27 48.76	1.7547	6 20 27.9	13.693
23	23 5 53.59	1.7564	4 34 58.3	13.931	23	0 29 34.09	1.7564	6 34 8.8	13.671
24	23 7 38.93	1.7548	S. 4 21 2.1	13.942	24	0 31 19.52	1.7581	N. 6 47 48.4	13.648

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 17.					WEDNESDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	31 19.52	1.7581	N. 6 47 48.4	13.648	0	1 58 57.12	1.9188	N. 17 2 13.2	11.646
1	33 5.06	1.7598	7 1 26.6	13.625	1	2 0 52.40	1.9238	17 13 50.1	11.583
2	34 50.70	1.7616	7 15 3.4	13.601	2	2 47.98	1.9288	17 25 23.2	11.520
3	36 36.45	1.7634	7 28 38.7	13.575	3	2 4 43.86	1.9339	17 36 52.5	11.456
4	38 22.31	1.7654	7 42 12.4	13.549	4	2 6 40.05	1.9390	17 48 17.9	11.390
5	40 8.30	1.7675	7 55 44.6	13.523	5	2 8 36.54	1.9441	17 59 39.3	11.324
6	41 54.41	1.7696	8 9 15.2	13.496	6	2 10 33.34	1.9493	18 10 56.8	11.257
7	43 40.65	1.7717	8 22 44.1	13.468	7	2 12 30.46	1.9547	18 22 10.2	11.189
8	45 27.02	1.7740	8 36 11.3	13.439	8	2 14 27.90	1.9601	18 33 19.5	11.120
9	47 13.53	1.7768	8 49 36.8	13.410	9	2 16 25.67	1.9655	18 44 24.6	11.050
10	49 0.18	1.7787	9 3 0.5	13.379	10	2 18 23.76	1.9709	18 55 25.5	10.979
11	50 46.97	1.7811	9 16 22.3	13.348	11	2 20 22.18	1.9764	19 6 22.1	10.907
12	52 33.91	1.7837	9 29 42.2	13.316	12	2 22 20.93	1.9820	19 17 14.4	10.835
13	54 21.01	1.7868	9 43 0.2	13.283	13	2 24 20.02	1.9876	19 28 2.3	10.761
14	56 8.26	1.7888	9 56 16.2	13.251	14	2 26 19.45	1.9932	19 38 45.7	10.685
15	57 55.67	1.7915	10 9 30.3	13.217	15	2 28 19.21	1.9989	19 49 24.5	10.609
16	59 43.24	1.7943	10 22 42.3	13.182	16	2 30 19.32	2.0047	19 59 58.8	10.532
17	1 30.99	1.7972	10 35 52.1	13.146	17	2 32 19.78	2.0106	20 10 28.4	10.454
18	1 3 18.91	1.8002	10 48 59.8	13.110	18	2 34 20.59	2.0164	20 20 53.3	10.375
19	1 5 7.01	1.8032	11 2 5.3	13.073	19	2 36 21.75	2.0223	20 31 13.4	10.295
20	1 6 55.29	1.8062	11 15 8.6	13.036	20	2 38 23.27	2.0283	20 41 28.7	10.214
21	1 8 43.75	1.8093	11 28 9.6	12.997	21	2 40 25.15	2.0343	20 51 39.1	10.132
22	1 10 32.40	1.8125	11 41 8.3	12.957	22	2 42 27.39	2.0404	21 1 44.5	10.048
23	1 12 21.25	1.8157	N. 11 54 4.5	12.917	23	2 44 30.00	2.0465	N. 21 11 44.9	9.965
TUESDAY 18.					THURSDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	14 10.29	1.8190	N. 12 6 58.3	12.876	0	2 46 32.97	2.0526	N. 21 21 40.1	9.876
1	15 59.53	1.8224	12 19 49.6	12.834	1	2 48 36.31	2.0588	21 31 30.2	9.792
2	17 48.98	1.8260	12 32 38.4	12.792	2	2 50 40.02	2.0650	21 41 15.1	9.703
3	19 38.65	1.8296	12 45 24.7	12.750	3	2 52 44.11	2.0712	21 50 54.6	9.614
4	21 28.53	1.8332	12 58 8.4	12.705	4	2 54 48.57	2.0775	22 0 28.8	9.525
5	23 18.63	1.8368	13 10 49.3	12.659	5	2 56 53.41	2.0838	22 9 57.6	9.433
6	25 8.94	1.8404	13 23 27.5	12.613	6	2 58 58.63	2.0902	22 19 20.8	9.341
7	26 59.48	1.8442	13 36 2.9	12.567	7	3 1 4.23	2.0966	22 28 38.5	9.247
8	28 50.25	1.8482	13 48 35.6	12.521	8	3 3 10.22	2.1030	22 37 50.5	9.152
9	30 41.26	1.8522	14 1 5.4	12.472	9	3 5 16.59	2.1094	22 46 56.8	9.057
10	32 32.51	1.8562	14 13 32.2	12.423	10	3 7 23.35	2.1159	22 55 57.3	8.960
11	34 24.00	1.8602	14 25 56.1	12.373	11	3 9 30.50	2.1223	23 4 52.0	8.862
12	36 15.73	1.8643	14 38 17.0	12.322	12	3 11 38.03	2.1289	23 13 40.8	8.763
13	38 7.71	1.8685	14 50 34.8	12.271	13	3 13 45.96	2.1354	23 22 23.6	8.662
14	39 59.95	1.8727	15 2 49.5	12.218	14	3 15 54.28	2.1420	23 31 0.3	8.561
15	41 52.44	1.8770	15 15 1.0	12.165	15	3 18 3.00	2.1486	23 39 30.9	8.458
16	43 45.19	1.8814	15 27 9.3	12.111	16	3 20 12.11	2.1552	23 47 55.3	8.354
17	45 38.21	1.8860	15 39 14.3	12.056	17	3 22 21.62	2.1618	23 56 13.4	8.249
18	47 31.51	1.8906	15 51 16.0	12.000	18	3 24 31.53	2.1685	24 4 25.2	8.143
19	49 25.08	1.8951	16 3 14.3	11.943	19	3 26 41.84	2.1752	24 12 30.6	8.036
20	51 18.02	1.8997	16 15 9.2	11.885	20	3 28 52.55	2.1817	24 20 29.5	7.927
21	53 13.04	1.9044	16 27 0.5	11.826	21	3 31 3.05	2.1883	24 28 21.8	7.817
22	55 7.45	1.9091	16 38 48.3	11.767	22	3 33 15.15	2.1950	24 36 7.5	7.706
23	57 2.14	1.9139	16 50 32.6	11.707	23	3 35 27.05	2.2018	24 43 46.5	7.593
24	58 57.12	1.9188	N. 17 2 13.2	11.646	24	3 37 39.36	2.2085	N. 24 51 18.7	7.480

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 21.					SUNDAY 23.				
0	3 37 39.36	2.2085	N.24 51 18.7	7.480	0	5 30 50.87	2.4863	N.28 16 30.7	0.633
1	3 39 52.07	2.2151	24 58 44.1	7.365	1	5 33 20.17	2.4902	28 17 3.6	0.464
2	3 42 5.17	2.2218	25 6 2.5	7.249	2	5 35 49.69	2.4939	28 17 26.4	0.296
3	3 44 18.67	2.2284	25 13 13.9	7.132	3	5 38 19.44	2.4976	28 17 39.1	+ 0.126
4	3 46 32.58	2.2351	25 20 18.3	7.013	4	5 40 49.41	2.5013	28 17 41.5	- 0.046
5	3 48 46.89	2.2417	25 27 15.5	6.893	5	5 43 19.59	2.5048	28 17 33.6	0.217
6	3 51 1.59	2.2483	25 34 5.5	6.772	6	5 45 49.98	2.5081	28 17 15.5	0.389
7	3 53 16.69	2.2550	25 40 48.2	6.650	7	5 48 20.56	2.5113	28 16 47.0	0.562
8	3 55 32.19	2.2617	25 47 23.5	6.527	8	5 50 51.33	2.5144	28 16 8.1	0.734
9	3 57 48.09	2.2683	25 53 51.4	6.405	9	5 53 22.29	2.5174	28 15 18.9	0.907
10	4 0 4.38	2.2748	26 0 11.8	6.277	10	5 55 53.42	2.5202	28 14 19.2	1.082
11	4 2 21.07	2.2814	26 6 24.6	6.149	11	5 58 24.71	2.5228	28 13 9.0	1.258
12	4 4 38.15	2.2879	26 12 29.7	6.021	12	6 0 56.16	2.5254	28 11 48.2	1.434
13	4 6 55.62	2.2944	26 18 27.1	5.892	13	6 3 27.76	2.5279	28 10 16.9	1.610
14	4 9 13.48	2.3009	26 24 16.7	5.760	14	6 5 59.51	2.5305	28 8 35.0	1.787
15	4 11 31.73	2.3073	26 29 58.3	5.628	15	6 8 31.40	2.5326	28 6 42.5	1.964
16	4 13 50.36	2.3138	26 35 32.0	5.495	16	6 11 3.42	2.5347	28 4 39.3	2.142
17	4 16 9.38	2.3202	26 40 57.7	5.360	17	6 13 35.56	2.5366	28 2 25.5	2.319
18	4 18 28.78	2.3265	26 46 15.2	5.224	18	6 16 7.81	2.5384	28 0 1.0	2.497
19	4 20 48.56	2.3327	26 51 24.6	5.088	19	6 18 40.17	2.5402	27 57 25.8	2.676
20	4 23 8.71	2.3390	26 56 25.8	4.950	20	6 21 12.63	2.5417	27 54 39.9	2.855
21	4 25 29.24	2.3452	27 1 18.6	4.810	21	6 23 45.17	2.5430	27 51 43.2	3.034
22	4 27 50.14	2.3514	27 6 3.0	4.670	22	6 26 17.79	2.5443	27 48 35.8	3.213
23	4 30 11.41	2.3576	N.27 10 39.0	4.528	23	6 28 50.49	2.5456	N.27 45 17.6	3.393
SATURDAY 22.					MONDAY 24.				
0	4 32 33.05	2.3637	N.27 15 6.4	4.385	0	6 31 23.26	2.5466	N.27 41 48.6	3.578
1	4 34 55.05	2.3696	27 19 25.2	4.242	1	6 33 56.08	2.5474	27 38 8.8	3.753
2	4 37 17.40	2.3755	27 23 35.4	4.097	2	6 36 28.95	2.5482	27 34 18.2	3.933
3	4 39 40.11	2.3814	27 27 36.8	3.950	3	6 39 1.87	2.5489	27 30 16.8	4.113
4	4 42 3.17	2.3872	27 31 29.4	3.802	4	6 41 34.82	2.5494	27 26 4.6	4.294
5	4 44 26.57	2.3929	27 35 13.1	3.654	5	6 44 7.80	2.5498	27 21 41.5	4.474
6	4 46 50.32	2.3986	27 38 47.9	3.505	6	6 46 40.80	2.5501	27 17 7.7	4.653
7	4 49 14.41	2.4042	27 42 13.7	3.353	7	6 49 13.81	2.5502	27 12 23.1	4.834
8	4 51 38.83	2.4097	27 45 30.3	3.201	8	6 51 46.82	2.5502	27 7 27.6	5.015
9	4 54 3.58	2.4152	27 48 37.8	3.048	9	6 54 19.83	2.5501	27 2 21.3	5.195
10	4 56 28.65	2.4206	27 51 36.1	2.894	10	6 56 52.83	2.5498	26 57 4.2	5.375
11	4 58 54.05	2.4259	27 54 25.1	2.739	11	6 59 25.81	2.5494	26 51 36.3	5.554
12	5 1 19.76	2.4311	27 57 4.8	2.583	12	7 1 58.76	2.5488	26 45 57.7	5.733
13	5 3 45.78	2.4362	27 59 35.1	2.426	13	7 4 31.67	2.5482	26 40 8.3	5.913
14	5 6 12.10	2.4412	28 1 55.9	2.267	14	7 7 4.55	2.5476	26 34 8.1	6.092
15	5 8 38.73	2.4462	28 4 7.2	2.108	15	7 9 37.38	2.5468	26 27 57.2	6.271
16	5 11 5.65	2.4510	28 6 8.9	1.948	16	7 12 10.16	2.5458	26 21 35.6	6.449
17	5 13 32.85	2.4558	28 8 1.0	1.787	17	7 14 42.87	2.5446	26 15 3.3	6.627
18	5 16 0.34	2.4605	28 9 43.3	1.624	18	7 17 15.51	2.5434	26 8 20.4	6.804
19	5 18 28.11	2.4650	28 11 15.9	1.461	19	7 19 48.08	2.5421	26 1 26.8	6.981
20	5 20 56.14	2.4694	28 12 38.7	1.298	20	7 22 20.56	2.5406	25 54 22.6	7.157
21	5 23 24.44	2.4738	28 13 51.6	1.133	21	7 24 52.95	2.5390	25 47 7.9	7.333
22	5 25 53.00	2.4781	28 14 54.6	0.968	22	7 27 25.24	2.5374	25 39 42.6	7.509
23	5 28 21.81	2.4822	28 15 47.7	0.801	23	7 29 57.44	2.5357	25 32 6.8	7.684
24	5 30 50.87	2.4863	N.28 16 30.7	0.633	24	7 32 29.53	2.5338	N.25 24 20.5	7.858

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 25.					THURSDAY 27.				
0	7 32 29.53	2.5138	N. 25 24 20.5	7.858	0	9 30 36.24	2.3721	N. 16 5 13.1	14.931
1	7 35 1.50	2.5318	25 16 23.8	8.032	1	9 32 58.45	2.3683	15 50 13.9	15.042
2	7 37 33.35	2.5298	25 8 16.7	8.205	2	9 35 20.43	2.3645	15 35 8.1	15.150
3	7 40 5.08	2.5277	24 59 59.2	8.377	3	9 37 42.19	2.3607	15 19 55.9	15.256
4	7 42 36.68	2.5255	24 51 31.4	8.549	4	9 40 3.72	2.3570	15 4 37.4	15.361
5	7 45 8.14	2.5231	24 42 53.3	8.720	5	9 42 25.03	2.3532	14 49 12.6	15.464
6	7 47 39.45	2.5206	24 34 5.0	8.890	6	9 44 46.11	2.3495	14 33 41.7	15.565
7	7 50 10.61	2.5181	24 25 6.5	9.059	7	9 47 6.97	2.3459	14 18 4.8	15.664
8	7 52 41.62	2.5156	24 15 57.9	9.227	8	9 49 27.62	2.3423	14 2 22.0	15.762
9	7 55 12.48	2.5129	24 6 39.3	9.393	9	9 51 48.05	2.3387	13 46 33.4	15.857
10	7 57 43.17	2.5101	23 57 10.7	9.560	10	9 54 8.27	2.3352	13 30 39.2	15.950
11	8 0 13.69	2.5072	23 47 32.1	9.726	11	9 56 28.27	2.3316	13 14 39.4	16.042
12	8 2 44.04	2.5043	23 37 43.6	9.891	12	9 58 48.06	2.3282	12 58 34.1	16.132
13	8 5 14.21	2.5013	23 27 45.2	10.054	13	10 1 7.65	2.3247	12 42 23.5	16.220
14	8 7 44.20	2.4983	23 17 37.1	10.216	14	10 3 27.03	2.3213	12 26 7.7	16.305
15	8 10 14.01	2.4952	23 7 19.3	10.377	15	10 5 46.21	2.3180	12 9 46.9	16.388
16	8 12 43.63	2.4920	22 56 51.8	10.537	16	10 8 5.19	2.3147	11 53 21.1	16.470
17	8 15 13.05	2.4887	22 46 14.8	10.696	17	10 10 23.98	2.3115	11 36 50.5	16.550
18	8 17 42.27	2.4853	22 35 28.3	10.854	18	10 12 42.57	2.3083	11 20 15.1	16.628
19	8 20 11.29	2.4820	22 24 32.3	11.012	19	10 15 0.97	2.3052	11 3 35.1	16.703
20	8 22 40.11	2.4787	22 13 26.9	11.167	20	10 17 19.19	2.3022	10 46 50.7	16.777
21	8 25 8.73	2.4752	22 2 12.3	11.320	21	10 19 37.23	2.2992	10 30 1.9	16.848
22	8 27 37.14	2.4717	21 50 48.5	11.473	22	10 21 55.09	2.2962	10 13 8.9	16.918
23	8 30 5.33	2.4681	N. 21 39 15.5	11.626	23	10 24 12.77	2.2932	N. 9 56 11.8	16.986
WEDNESDAY 26.					FRIDAY 28.				
0	8 32 33.31	2.4645	N. 21 27 33.4	11.776	0	10 26 30.27	2.2903	N. 9 39 10.6	17.051
1	8 35 1.07	2.4608	21 15 42.4	11.924	1	10 28 47.60	2.2875	9 22 5.6	17.114
2	8 37 28.61	2.4572	21 3 42.5	12.072	2	10 31 4.77	2.2848	9 4 56.9	17.176
3	8 39 55.93	2.4534	20 51 33.7	12.219	3	10 33 21.78	2.2822	8 47 44.5	17.235
4	8 42 23.02	2.4497	20 39 16.2	12.364	4	10 35 38.63	2.2796	8 30 28.7	17.292
5	8 44 49.89	2.4459	20 26 50.0	12.507	5	10 37 55.33	2.2770	8 13 9.5	17.347
6	8 47 16.53	2.4421	20 14 15.3	12.649	6	10 40 11.87	2.2744	7 55 47.0	17.401
7	8 49 42.94	2.4383	20 1 32.1	12.790	7	10 42 28.26	2.2720	7 38 21.4	17.452
8	8 52 9.12	2.4345	19 48 40.5	12.928	8	10 44 44.51	2.2697	7 20 52.8	17.500
9	8 54 35.08	2.4306	19 35 40.7	13.065	9	10 47 0.63	2.2675	7 3 21.4	17.546
10	8 57 0.80	2.4267	19 22 32.7	13.202	10	10 49 16.61	2.2653	6 45 47.3	17.591
11	8 59 26.28	2.4227	19 9 16.5	13.338	11	10 51 32.46	2.2631	6 28 10.5	17.634
12	9 1 51.53	2.4188	18 55 52.2	13.471	12	10 53 48.18	2.2610	6 10 31.2	17.675
13	9 4 16.54	2.4149	18 42 20.0	13.601	13	10 56 3.78	2.2590	5 52 49.5	17.713
14	9 6 41.32	2.4111	18 28 40.1	13.729	14	10 58 19.26	2.2571	5 35 5.6	17.749
15	9 9 5.87	2.4072	18 14 52.5	13.857	15	11 0 34.63	2.2553	5 17 19.6	17.783
16	9 11 30.18	2.4032	18 0 57.3	13.983	16	11 2 49.89	2.2535	4 59 31.6	17.816
17	9 13 54.26	2.3993	17 46 54.5	14.108	17	11 5 5.05	2.2517	4 41 41.7	17.846
18	9 16 18.10	2.3954	17 32 44.3	14.231	18	11 7 20.10	2.2500	4 23 50.1	17.873
19	9 18 41.71	2.3915	17 18 26.8	14.352	19	11 9 35.05	2.2485	4 5 56.9	17.899
20	9 21 5.08	2.3876	17 4 2.1	14.472	20	11 11 49.92	2.2471	3 48 2.2	17.923
21	9 23 28.22	2.3837	16 49 30.2	14.590	21	11 14 4.70	2.2457	3 30 6.1	17.945
22	9 25 51.13	2.3798	16 34 51.3	14.705	22	11 16 19.40	2.2443	3 12 8.8	17.964
23	9 28 13.80	2.3759	16 20 5.6	14.818	23	11 18 34.02	2.2430	2 54 10.4	17.982
24	9 30 36.24	2.3721	N. 16 5 13.1	14.931	24	11 20 48.56	2.2418	N. 2 36 11.0	17.997

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.			Diff. for 1 Minute.	
SATURDAY 29.									
	h	m	s	"	°	'	"	"	
0	11	20	48.56	2.2418	N.	2	36	11.0	17.997
1	11	23	3.03	2.2407		2	18	10.8	18.010
2	11	25	17.44	2.2397		2	0	9.8	18.022
3	11	27	31.80	2.2388		1	42	8.2	18.031
4	11	29	46.10	2.2379		1	24	6.1	18.037
5	11	32	0.35	2.2372		1	6	3.7	18.042
6	11	34	14.56	2.2365		0	48	1.1	18.044
7	11	36	28.73	2.2358		0	29	58.4	18.045
8	11	38	42.86	2.2352	N.	0	11	55.7	18.044
9	11	40	56.95	2.2347	S.	0	6	6.9	18.041
10	11	43	11.02	2.2343		0	24	9.2	18.035
11	11	45	25.07	2.2340		0	42	11.1	18.028
12	11	47	39.10	2.2338		1	0	12.5	18.018
13	11	49	53.12	2.2337		1	18	13.2	18.006
14	11	52	7.14	2.2336		1	36	13.2	17.993
15	11	54	21.15	2.2335		1	54	12.3	17.977
16	11	56	35.16	2.2336		2	12	10.4	17.958
17	11	58	49.18	2.2337		2	30	7.3	17.938
18	12	1	3.21	2.2340		2	48	3.0	17.917
19	12	3	17.26	2.2343		3	5	57.3	17.893
20	12	5	31.33	2.2347		3	23	50.1	17.867
21	12	7	45.42	2.2351		3	41	41.3	17.838
22	12	9	59.54	2.2357		3	59	30.7	17.808
23	12	12	13.70	2.2364	S.	4	17	18.3	17.777

SUNDAY, MARCH 1.

0	12	14	27.91	2.2371	S.	4	35	3	9	17.743
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PHASES OF THE MOON.

		d	h	m
☾	Last Quarter . . . Feb.	5	12	38.0
●	New Moon	13	4	12.6
☾	First Quarter	21	9	14.6
○	Full Moon	28	7	51.3

		d	h
☾	Apogee Feb.	16	8.0
☾	Perigee	28	23.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.			P. L. of Diff.			IIIh.			P. L. of Diff.			VIh.			P. L. of Diff.			IXh.			P. L. of Diff.		
			°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"
1	Aldebaran	W.	93	9	45	2143			94	59	36	2149			96	49	21	2153			98	38	59	2159		
	Pollux	W.	50	14	23	2079			52	5	55	2082			53	57	22	2085			55	48	44	2090		
	JUPITER	W.	38	32	23	2037			40	25	0	2040			42	17	32	2043			44	9	59	2048		
	Spica	E.	40	48	57	2073			38	57	17	2078			37	5	44	2082			35	14	17	2088		
	SATURN	E.	67	1	14	2124			65	10	52	2129			63	20	37	2134			61	30	30	2141		
	Antares	E.	86	40	34	2068			84	48	46	2072			82	57	3	2076			81	5	27	2081		
	VENUS	E.	111	37	43	2463			109	55	38	2467			108	13	38	2470			106	31	42	2475		
2	MARS	E.	115	20	56	2300			113	34	57	2304			111	49	3	2308			110	3	15	2312		
	Pollux	W.	65	3	37	2119			66	54	7	2127			68	44	25	2135			70	34	31	2143		
	JUPITER	W.	53	30	15	2077			55	21	49	2085			57	13	11	2093			59	4	21	2101		
	Regulus	W.	28	6	3	2112			29	56	44	2119			31	47	14	2128			33	37	31	2136		
	SATURN	E.	52	22	43	2184			50	33	51	2194			48	45	15	2206			46	56	57	2220		
	Antares	E.	71	49	30	2112			69	58	49	2120			68	8	20	2128			66	18	3	2137		
	VENUS	E.	98	3	56	2506			96	22	51	2514			94	41	57	2523			93	1	16	2532		
3	MARS	E.	101	16	10	2344			99	31	15	2352			97	46	31	2360			96	1	59	2370		
	SUN	E.	136	46	11	2425			135	3	12	2433			133	20	24	2442			131	37	49	2450		
	Pollux	W.	79	41	35	2192			81	30	14	2202			83	18	38	2214			85	6	45	2225		
	JUPITER	W.	68	16	43	2150			70	6	26	2161			71	55	53	2172			73	45	3	2182		
	Regulus	W.	42	45	28	2185			44	34	18	2196			46	22	52	2207			48	11	9	2218		
	Antares	E.	57	10	10	2186			55	21	21	2196			53	32	48	2208			51	44	32	2219		
	VENUS	E.	84	41	12	2585			83	1	56	2596			81	22	56	2609			79	44	13	2621		
4	MARS	E.	87	21	50	2421			85	39	45	2433			83	56	57	2444			82	14	25	2456		
	SUN	E.	123	8	14	2502			121	27	4	2513			119	46	9	2525			118	5	31	2537		
	Pollux	W.	94	3	3	2225			95	49	25	2238			97	35	28	2250			99	21	13	2263		
	JUPITER	W.	82	46	30	2242			84	34	1	2255			86	21	7	2267			88	7	55	2280		
	Regulus	W.	57	8	14	2279			58	54	45	2291			60	40	58	2303			62	26	53	2316		
	Antares	E.	42	47	31	2279			41	1	1	2291			39	14	49	2304			37	28	56	2317		
	VENUS	E.	71	34	55	2687			69	57	58	2701			68	21	19	2715			66	44	59	2729		
5	MARS	E.	73	46	5	2520			72	5	19	2533			70	24	52	2546			68	44	43	2560		
	SUN	E.	109	46	36	2601			108	7	42	2615			106	29	7	2628			104	50	50	2642		
	Pollux	W.	108	5	15	2388			109	49	7	2401			111	32	41	2414			113	15	56	2427		
	JUPITER	W.	96	57	13	2344			98	42	9	2357			100	26	46	2370			102	11	4	2382		
	Regulus	W.	71	11	46	2380			72	55	49	2394			74	39	33	2407			76	22	58	2419		
	VENUS	E.	58	48	6	2682			57	13	41	2618			55	39	36	2632			54	5	50	2646		
	MARS	E.	60	28	43	2620			58	50	28	2643			57	12	32	2657			55	34	55	2671		
6	SUN	E.	96	44	2	2710			95	7	36	2725			93	31	29	2738			91	55	40	2752		
	JUPITER	W.	110	48	1	2446			112	30	30	2459			114	12	41	2471			115	54	35	2484		
	Regulus	W.	84	55	32	2451			86	37	0	2464			88	18	20	2477			89	59	32	2490		
	Spica	W.	30	57	0	2402			32	38	31	2415			34	10	40	2428			36	0	32	2440		
	VENUS	E.	46	21	53	2634			44	50	4	2646			43	18	34	2659			41	47	24	2670		
	MARS	E.	47	31	31	2712			45	55	47	2725			44	20	21	2738			42	45	13	2750		
	SUN	E.	84	1	6	2811			82	27	5	2824			80	53	21	2837			79	19	54	2851		
7	Regulus	W.	68	20	32	2455			69	50	55	2468			101	39	3	2482			103	17	55	2496		
	Spica	W.	44	50	52	2455			46	0	8	2468			47	30	0	2482			49	17	55	2496		
	VENUS	E.	34	10	32	2611			32	47	22	2624			31	18	34	2638			29	50	7	2652		
	SUN	E.	71	30	53	2825			70	5	6	2838			68	33	34	2852			67	2	17	2866		

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Aldebaran W.	100 28 28	2165	102 17 48	2172	104 6 58	2180	105 55 56	2188
	Pollux W.	57 39 59	2094	59 31 7	2100	61 22 6	2106	63 12 56	2112
	JUPITER W.	46 2 19	2052	47 54 32	2058	49 46 36	2064	51 38 31	2071
	Spica E.	33 22 59	2094	31 31 50	2100	29 40 51	2107	27 50 3	2116
	SATURN E.	59 40 33	2148	57 50 47	2155	56 1 12	2164	54 11 50	2174
	Antares E.	79 13 58	2086	77 22 37	2092	75 31 25	2098	73 40 22	2105
	VENUS E.	104 49 53	2480	103 8 11	2485	101 26 37	2492	99 45 12	2498
	MARS E.	108 17 33	2317	106 31 59	2323	104 46 33	2329	103 1 16	2337
2	Pollux W.	72 24 24	2152	74 14 4	2162	76 3 29	2171	77 52 40	2182
	JUPITER W.	60 55 18	2111	62 46 1	2120	64 36 30	2130	66 26 44	2139
	Regulus W.	35 27 35	2145	37 17 25	2155	39 7 1	2165	40 56 22	2174
	SATURN E.	45 8 59	2233	43 21 21	2248	41 34 5	2264	39 47 12	2281
	Antares E.	64 28 0	2145	62 38 10	2155	60 48 35	2165	58 59 15	2175
	VENUS E.	91 20 47	2541	89 40 31	2552	88 0 30	2562	86 20 43	2574
	MARS E.	94 17 41	2379	92 33 36	2389	90 49 46	2399	89 6 10	2410
	SUN E.	129 55 26	2460	128 13 17	2470	126 31 21	2480	124 49 40	2491
3	Pollux W.	86 54 36	2237	88 42 9	2248	90 29 25	2260	92 16 23	2272
	JUPITER W.	75 33 57	2194	77 22 33	2206	79 10 52	2218	80 58 53	2230
	Regulus W.	49 59 9	2230	51 46 52	2242	53 34 17	2253	55 21 25	2266
	Antares E.	49 56 32	2231	48 8 50	2243	46 21 26	2254	44 34 19	2267
	VENUS E.	78 5 46	2634	76 27 37	2646	74 49 45	2660	73 12 11	2673
	MARS E.	80 32 10	2468	78 50 12	2481	77 8 32	2493	75 27 9	2507
	SUN E.	116 25 9	2549	114 45 4	2562	113 5 17	2575	111 25 48	2588
4	Pollux W.	101 6 39	2336	102 51 46	2348	104 36 35	2362	106 21 4	2375
	JUPITER W.	89 54 24	2293	91 40 34	2305	93 26 26	2318	95 11 59	2331
	Regulus W.	64 12 29	2329	65 57 46	2342	67 42 45	2355	69 27 25	2368
	Antares E.	35 43 22	2330	33 58 6	2343	32 13 9	2356	30 28 31	2368
	VENUS E.	65 8 58	2744	63 33 16	2758	61 57 53	2773	60 22 50	2788
	MARS E.	67 4 53	2574	65 25 22	2588	63 46 10	2601	62 7 17	2615
	SUN E.	103 12 52	2655	101 35 12	2669	99 57 50	2683	98 20 47	2696
5	Pollux W.	114 58 52	2441	116 41 29	2453	118 23 49	2465	120 5 51	2480
	JUPITER W.	103 55 4	2395	105 38 46	2408	107 22 9	2421	109 5 14	2433
	Regulus W.	78 6 5	2433	79 48 53	2445	81 31 24	2458	83 13 37	2470
	VENUS E.	52 32 24	2862	50 59 17	2878	49 26 30	2893	47 54 2	2908
	MARS E.	53 57 36	2686	52 20 37	2699	50 43 56	2713	49 7 34	2728
	SUN E.	90 20 9	2766	88 44 56	2780	87 10 2	2793	85 35 25	2807
6	JUPITER W.	117 36 11	2496	119 17 30	2508	120 58 32	2520	122 39 18	2532
	Regulus W.	91 40 17	2533	93 20 45	2544	95 0 57	2556	96 40 53	2568
	Spica W.	37 41 8	2538	39 21 28	2550	41 1 32	2561	42 41 20	2573
	VENUS E.	40 16 34	2986	38 46 4	3001	37 15 53	3018	35 46 2	3034
	MARS E.	41 10 24	2798	39 35 53	2811	38 1 40	2825	36 27 45	2840
	SUN E.	77 46 45	2873	76 13 52	2887	74 41 16	2899	73 8 56	2912
7	Regulus W.	104 56 31	2625	106 34 52	2635	108 12 59	2646	109 50 51	2657
	Spica W.	50 56 26	2629	52 34 42	2639	54 12 44	2650	55 50 31	2660
	VENUS E.	28 22 3	3124	26 54 22	3144	25 27 6	3165	24 0 15	3188
	SUN E.	65 31 16	2973	64 0 30	2985	62 29 58	2997	60 59 41	3009

GREENWICH MEAN TIME.

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Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
8	Regulus W.	111 28 29	2667	113 5 53	2678	114 43 3	2687	116 20 0	2698
	Spica W.	57 28 4	2671	59 5 23	2681	60 42 29	2690	62 19 22	2701
	SATURN W.	31 56 21	2806	33 30 41	2806	35 5 1	2807	36 39 20	2808
	SUN E.	59 29 39	3020	57 59 51	3030	56 30 16	3041	55 0 54	3052
9	Spica W.	70 20 31	2748	71 56 7	2756	73 31 32	2766	75 6 45	2774
	SATURN W.	44 30 0	2828	46 3 51	2834	47 37 35	2839	49 11 12	2845
	Antares W.	24 26 33	2747	26 2 11	2756	27 37 37	2764	29 12 52	2773
	SUN E.	47 37 21	3103	46 9 15	3114	44 41 22	3124	43 13 41	3133
10	Spica W.	83 0 2	2816	84 34 9	2823	86 8 5	2831	87 41 52	2840
	SATURN W.	56 57 24	2875	58 30 15	2881	60 2 58	2887	61 35 33	2894
	Antares W.	37 6 17	2815	38 40 26	2822	40 14 25	2830	41 48 14	2838
	SUN E.	35 58 4	3178	34 31 29	3188	33 5 5	3196	31 38 51	3204
11	Spica W.	95 28 16	2876	97 1 5	2884	98 33 44	2891	100 6 14	2898
	SATURN W.	69 16 25	2926	70 48 11	2932	72 19 49	2939	73 51 19	2944
	Antares W.	49 34 50	2875	51 7 41	2883	52 40 22	2890	54 12 54	2896
	SUN E.	24 30 11	3246	23 4 56	3254	21 39 51	3262	20 14 55	3270
14	SUN W.	9 2 34	3418	10 24 30	3418	11 46 26	3421	13 8 19	3423
	α Arietis E.	62 16 22	3043	60 47 3	3049	59 17 51	3054	57 48 45	3060
	Aldebaran E.	93 56 39	3097	92 28 26	3101	91 0 18	3105	89 32 15	3110
15	SUN W.	19 56 51	3440	21 18 22	3444	22 39 49	3446	24 1 13	3450
	α Arietis E.	50 24 51	3085	48 56 23	3089	47 28 0	3094	45 59 43	3099
	Aldebaran E.	82 13 22	3132	80 45 51	3135	79 18 24	3139	77 51 2	3143
16	SUN W.	30 47 27	3461	32 8 35	3463	33 29 41	3464	34 50 45	3465
	α Arietis E.	38 39 45	3123	37 12 3	3128	35 44 27	3133	34 16 57	3138
	Aldebaran E.	70 35 21	3161	69 8 25	3165	67 41 34	3168	66 14 47	3171
	Pollux E.	113 14 22	3082	111 45 50	3082	110 17 19	3084	108 48 50	3085
17	SUN W.	41 35 56	3465	42 56 59	3465	44 18 2	3463	45 39 7	3462
	Aldebaran E.	59 1 44	3186	57 35 18	3188	56 8 55	3192	54 42 36	3194
	Pollux E.	101 26 35	3086	99 58 8	3085	98 29 40	3083	97 1 10	3082
	JUPITER E.	111 11 46	3043	109 42 27	3043	108 13 7	3042	106 43 46	3040
18	SUN W.	52 25 7	3448	53 46 29	3445	55 7 55	3440	56 29 26	3435
	Aldebaran E.	47 31 53	3211	46 5 57	3214	44 40 5	3219	43 14 18	3224
	Pollux E.	89 38 8	3070	88 9 22	3066	86 40 31	3063	85 11 36	3058
	JUPITER E.	99 16 28	3089	97 46 51	3025	96 17 9	3022	94 47 23	3018
19	SUN W.	63 18 33	3405	64 40 44	3397	66 3 4	3390	67 25 32	3381
	Pollux E.	77 45 30	3031	76 15 56	3024	74 46 13	3017	73 16 22	3009
	JUPITER E.	87 17 5	2990	85 46 40	2984	84 16 7	2977	82 45 26	2969
	Regulus E.	114 39 42	3024	113 9 59	3018	111 40 8	3010	110 10 8	3003
20	SUN W.	74 20 28	3332	75 44 2	3322	77 7 48	3310	78 31 48	3298
	Pollux E.	65 44 34	2966	64 13 39	2956	62 42 31	2946	61 11 10	2935
	JUPITER E.	75 9 28	2926	73 37 42	2916	72 5 44	2906	70 33 33	2895
	Regulus E.	102 37 35	2958	101 6 30	2948	99 35 12	2938	98 3 41	2926

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		° ' "		° ' "		° ' "		° ' "	
8	Regulus W.	117 56 43	2707	119 33 13	2716	121 9 31	2726	122 45 36	2736
	Spica W.	63 56 1	2710	65 32 27	2719	67 8 41	2729	68 44 42	2738
	SATURN W.	38 13 37	2811	39 47 50	2815	41 21 59	2819	42 56 2	2823
	SUN E.	53 31 46	3063	52 2 51	3073	50 34 8	3083	49 5 38	3094
9	Spica W.	76 41 47	2783	78 16 37	2792	79 51 16	2800	81 25 44	2808
	SATURN W.	50 44 42	2851	52 18 4	2856	53 51 19	2863	55 24 25	2869
	Antares W.	30 47 55	2782	32 22 47	2790	33 57 28	2798	35 31 58	2807
	SUN E.	41 46 11	3142	40 18 52	3152	38 51 45	3161	37 24 49	3170
10	Spica W.	89 15 28	2848	90 48 54	2855	92 22 11	2862	93 55 18	2869
	SATURN W.	63 7 59	2901	64 40 17	2906	66 12 28	2912	67 44 31	2920
	Antares W.	43 21 52	2845	44 55 21	2853	46 28 40	2860	48 1 50	2868
	SUN E.	30 12 47	3213	28 46 53	3221	27 21 9	3230	25 55 35	3238
11	Spica W.	101 38 35	2905	103 10 47	2912	104 42 51	2919	106 14 46	2926
	SATURN W.	75 22 42	2951	76 53 56	2957	78 25 3	2963	79 56 2	2969
	Antares W.	55 45 18	2903	57 17 33	2910	58 49 39	2916	60 21 37	2924
	SUN E.	18 50 9	3278	17 25 32	3287	16 1 5	3295	14 36 48	3303
14	SUN W.	14 30 9	3427	15 51 55	3430	17 13 38	3434	18 35 16	3437
	α Arietis E.	56 19 46	3065	54 50 53	3069	53 22 6	3074	51 53 25	3080
	Aldebaran E.	88 4 18	3114	86 36 26	3119	85 8 40	3123	83 40 58	3128
15	SUN W.	25 22 33	3453	26 43 50	3454	28 5 5	3457	29 26 17	3459
	α Arietis E.	44 31 32	3104	43 3 27	3108	41 35 27	3113	40 7 33	3118
	Aldebaran E.	76 23 45	3147	74 56 32	3151	73 29 24	3154	72 2 20	3158
16	SUN W.	36 11 48	3466	37 32 50	3466	38 53 52	3466	40 14 54	3466
	α Arietis E.	32 49 34	3144	31 22 18	3150	29 55 9	3158	28 28 9	3164
	Aldebaran E.	64 48 3	3174	63 21 23	3177	61 54 46	3180	60 28 13	3183
	Pollux E.	107 20 22	3086	105 51 55	3086	104 23 28	3087	102 55 2	3086
17	SUN W.	47 0 14	3460	48 21 23	3457	49 42 35	3455	51 3 49	3452
	Aldebaran E.	53 16 20	3198	51 50 8	3200	50 23 59	3204	48 57 54	3207
	Pollux E.	95 32 39	3080	94 4 5	3078	92 35 29	3076	91 6 50	3073
	JUPITER E.	105 14 23	3099	103 44 58	3037	102 15 31	3034	100 46 1	3032
18	SUN W.	57 51 3	3431	59 12 45	3424	60 34 34	3418	61 56 30	3412
	Aldebaran E.	41 48 37	3230	40 23 3	3236	38 57 36	3243	37 32 18	3253
	Pollux E.	83 42 35	3054	82 13 29	3048	80 44 16	3043	79 14 57	3037
	JUPITER E.	93 17 32	3013	91 47 35	3008	90 17 32	3002	88 47 22	2997
19	SUN W.	68 48 10	3372	70 10 58	3363	71 33 57	3353	72 57 7	3343
	Pollux E.	71 46 21	3001	70 16 10	2993	68 45 49	2985	67 15 17	2976
	JUPITER E.	81 14 35	2962	79 43 34	2954	78 12 23	2945	76 41 1	2936
	Regulus E.	108 39 59	2994	107 9 39	2986	105 39 9	2977	104 8 28	2968
20	SUN W.	79 56 2	3285	81 20 31	3272	82 45 15	3259	84 10 14	3245
	Pollux E.	59 39 36	2924	58 7 47	2912	56 35 44	2900	55 3 25	2887
	JUPITER E.	69 1 8	2884	67 28 29	2872	65 55 34	2860	64 22 24	2848
	Regulus E.	96 31 55	2915	94 59 55	2903	93 27 40	2891	91 55 9	2878

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		° ' "		° ' "		° ' "		° ' "	
21	SUN W.	85 35 30	3231	87 1 3	3216	88 26 53	3201	89 53 1	3186
	Pollux E.	53 30 50	2875	51 57 59	2862	50 24 51	2848	48 51 26	2835
	JUPITER E.	62 48 58	2835	61 15 15	2822	59 41 16	2808	58 6 59	2795
	Regulus E.	90 22 22	2865	88 49 18	2852	87 15 57	2838	85 42 18	2823
22	SUN W.	97 8 32	3101	98 36 40	3084	100 5 9	3065	101 34 1	3047
	α Arietis W.	34 22 26	2801	35 56 52	2782	37 31 44	2761	39 7 3	2741
	Pollux E.	40 59 47	2762	39 24 29	2746	37 48 50	2731	36 12 51	2716
	JUPITER E.	50 10 51	2719	48 34 37	2704	46 58 2	2688	45 21 6	2671
	Regulus E.	77 49 12	2746	76 13 33	2730	74 37 33	2713	73 1 10	2696
23	SUN W.	109 4 11	2950	110 35 26	2931	112 7 6	2910	113 39 12	2890
	α Arietis W.	47 10 21	2640	48 48 21	2620	50 26 49	2600	52 5 44	2580
	JUPITER E.	37 10 44	2585	35 31 29	2569	33 51 51	2551	32 11 49	2533
	Regulus E.	64 53 28	2607	63 14 43	2588	61 35 32	2569	59 55 55	2551
	Spica E.	118 54 4	2610	117 15 23	2591	115 36 16	2573	113 56 44	2554
24	SUN W.	121 26 14	2767	123 0 59	2766	124 36 11	2746	126 11 50	2725
	α Arietis W.	60 27 15	2480	62 8 57	2460	63 51 7	2440	65 33 45	2420
	Aldebaran W.	30 15 16	2762	31 50 34	2713	33 26 56	2670	35 4 16	2629
	Regulus E.	51 31 20	2456	49 49 5	2436	48 6 22	2417	46 23 12	2398
	Spica E.	105 32 29	2459	103 50 18	2439	102 7 39	2420	100 24 33	2401
25	α Arietis W.	74 13 53	2324	75 59 17	2305	77 45 9	2287	79 31 28	2269
	Aldebaran W.	43 23 25	2466	45 5 26	2438	46 48 7	2411	48 31 26	2386
	Regulus E.	37 40 33	2304	35 54 40	2286	34 8 20	2268	32 21 34	2250
	Spica E.	91 42 12	2307	89 56 22	2289	88 10 6	2271	86 23 24	2253
	SATURN E.	118 1 30	2353	116 16 47	2333	114 31 36	2313	112 45 56	2295
26	α Arietis W.	88 29 28	2185	90 18 18	2170	92 7 31	2155	93 57 7	2141
	Aldebaran W.	57 16 39	2274	59 3 16	2255	60 50 22	2236	62 37 56	2218
	Spica E.	77 23 26	2170	75 34 13	2154	73 44 36	2139	71 54 37	2124
	SATURN E.	103 50 53	2207	102 2 36	2190	100 13 54	2175	98 24 49	2160
27	α Arietis W.	103 10 16	2077	105 1 50	2067	106 53 40	2057	108 45 46	2048
	Aldebaran W.	71 41 57	2143	73 31 51	2130	75 22 5	2118	77 12 36	2107
	Spica E.	62 39 25	2061	60 47 26	2050	58 55 10	2040	57 2 38	2031
	SATURN E.	89 14 4	2096	87 22 58	2085	85 31 35	2074	83 39 56	2065
	Antares E.	108 32 12	2058	106 40 8	2048	104 47 48	2037	102 55 12	2028
28	Aldebaran W.	86 28 52	2067	88 20 42	2062	90 12 40	2058	92 4 44	2054
	Pollux W.	43 27 33	2003	45 21 2	1997	47 14 41	1993	49 8 27	1988
	JUPITER W.	34 42 11	1977	36 36 22	1972	38 30 41	1967	40 25 8	1963
	Spica E.	47 36 43	1995	45 43 1	1990	43 49 11	1986	41 55 15	1983
	SATURN E.	74 18 31	2030	72 25 44	2026	70 32 51	2023	68 39 52	2021
	Antares E.	93 28 49	1991	91 35 0	1986	89 41 3	1981	87 46 59	1977
29	Aldebaran W.	101 25 55	2052	103 18 8	2055	105 10 17	2058	107 2 21	2062
	Pollux W.	58 38 30	1981	60 32 35	1981	62 26 39	1983	64 20 41	1986
	JUPITER W.	49 58 31	1955	51 53 16	1956	53 48 0	1958	55 42 40	1961
	SATURN E.	59 14 32	2023	57 21 33	2026	55 28 39	2023	53 35 53	2026
	Antares E.	78 15 40	1972	76 21 22	1973	74 27 5	1975	72 32 51	1976

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		° ' "		° ' "		° ' "		° ' "	
21	SUN W.	91 19 28	3169	92 46 14	3153	94 13 20	3136	95 40 46	3119
	Pollux E.	47 17 44	2821	45 43 43	2807	44 9 24	2792	42 34 45	2777
	JUPITER E.	56 32 24	2780	54 57 30	2766	53 22 17	2750	51 46 44	2735
	Regulus E.	84 8 20	2808	82 34 3	2793	80 59 26	2778	79 24 29	2765
22	SUN W.	103 3 16	3028	104 32 54	3009	106 2 55	2989	107 33 21	2970
	α Arietis W.	40 42 49	2720	42 19 2	2701	43 55 41	2681	45 32 47	2660
	Pollux E.	34 36 32	2700	32 59 52	2684	31 22 51	2669	29 45 29	2652
	JUPITER E.	43 43 47	2655	42 6 6	2638	40 28 2	2621	38 49 35	2603
	Regulus E.	71 24 25	2679	69 47 17	2661	68 9 45	2643	66 31 49	2625
23	SUN W.	115 11 43	2869	116 44 41	2849	118 18 5	2828	119 51 56	2808
	α Arietis W.	53 45 7	2560	55 24 57	2540	57 5 15	2520	58 46 1	2499
	JUPITER E.	30 31 22	2516	28 50 31	2499	27 9 16	2482	25 27 37	2465
	Regulus E.	58 15 53	2533	56 35 25	2513	54 54 30	2494	53 13 8	2475
	Spica E.	112 16 46	2535	110 36 22	2516	108 55 31	2497	107 14 13	2478
24	SUN W.	127 47 57	2704	129 24 31	2684	131 1 33	2664	132 39 1	2643
	α Arietis W.	67 16 51	2401	69 0 25	2381	70 44 27	2362	72 28 56	2343
	Aldebaran W.	36 42 31	2593	38 21 36	2579	40 1 28	2562	41 42 5	2545
	Regulus E.	44 39 35	2379	42 55 30	2360	41 10 58	2342	39 25 59	2323
	Spica E.	98 40 59	2382	96 56 58	2363	95 12 30	2344	93 27 35	2325
25	α Arietis W.	81 18 13	2251	83 5 24	2234	84 53 1	2218	86 41 2	2201
	Aldebaran W.	50 15 21	2362	51 59 51	2338	53 44 55	2316	55 30 31	2294
	Regulus E.	30 34 21	2233	28 46 43	2216	26 58 39	2199	25 10 10	2183
	Spica E.	84 36 15	2235	82 48 40	2218	81 0 40	2202	79 12 15	2186
	SATURN E.	110 59 49	2276	109 13 14	2258	107 26 13	2241	105 38 46	2223
26	α Arietis W.	95 47 4	2127	97 37 22	2113	99 28 1	2101	101 18 59	2088
	Aldebaran W.	64 25 56	2201	66 14 22	2186	68 3 11	2170	69 52 23	2156
	Spica E.	70 4 15	2111	68 13 32	2098	66 22 29	2085	64 31 6	2073
	SATURN E.	96 35 21	2146	94 45 32	2132	92 55 22	2119	91 4 52	2107
27	α Arietis W.	110 38 6	2039	112 30 39	2032	114 23 24	2025	116 16 19	2019
	Aldebaran W.	79 3 24	2098	80 54 27	2089	82 45 43	2081	84 37 12	2073
	Spica E.	55 9 52	2022	53 16 52	2014	51 23 40	2007	49 30 17	2000
	SATURN E.	81 48 3	2056	79 55 56	2049	78 3 38	2042	76 11 9	2036
	Antares E.	101 2 21	2019	99 9 16	2010	97 15 58	2003	95 22 29	1996
28	Aldebaran W.	93 56 54	2052	95 49 7	2050	97 41 23	2050	99 33 39	2050
	Pollux W.	51 2 20	1985	52 56 18	1982	54 50 20	1981	56 44 24	1980
	JUPITER W.	42 19 41	1960	44 14 19	1957	46 9 1	1956	48 3 45	1955
	Spica E.	40 1 14	1981	38 7 10	1979	36 13 3	1979	34 18 55	1979
	SATURN E.	66 46 50	2019	64 53 45	2019	63 0 40	2019	61 7 35	2020
	Antares E.	85 52 49	1975	83 58 35	1973	82 4 18	1972	80 9 59	1972
29	Aldebaran W.	108 54 18	2068	110 46 6	2075	112 37 44	2082	114 29 11	2091
	Pollux W.	66 14 38	1989	68 8 30	1993	70 2 15	1998	71 55 53	2005
	JUPITER W.	57 37 16	1965	59 31 46	1968	61 26 10	1974	63 20 26	1979
	SATURN E.	51 43 15	2043	49 50 48	2051	47 58 33	2060	46 6 32	2070
	Antares E.	70 38 42	1982	68 44 39	1986	66 50 42	1991	64 56 53	1997

AT GREENWICH APPARENT NOON.									
Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
<i>SUN.</i>	1	^h 22 ^m 51 ^s 33.99	9.342	S. 7° 16' 26.1"	+57.17	16' 10.29"	65.39	12 23.12	0.513
Mon.	2	22 55 17.95	9.322	6 53 30.9	57.42	16 10.04	65.32	12 10.57	0.533
Tues.	3	22 59 1.46	9.303	6 30 29.9	57.66	16 9.78	65.25	11 57.55	0.552
Wed.	4	23 2 44.51	9.285	6 7 23.3	+57.88	16 9.53	65.18	11 44.09	0.570
Thur.	5	23 6 27.14	9.268	5 44 11.6	58.09	16 9.27	65.12	11 30.21	0.587
Frid.	6	23 10 9.37	9.252	5 20 55.1	58.28	16 9.01	65.06	11 15.92	0.603
Sat.	7	23 13 51.22	9.236	4 57 34.2	+58.45	16 8.74	65.00	11 1.25	0.619
<i>SUN.</i>	8	23 17 32.70	9.221	4 34 9.3	58.61	16 8.48	64.95	10 46.22	0.633
Mon.	9	23 21 13.83	9.207	4 10 40.8	58.75	16 8.21	64.90	10 30.84	0.647
Tues.	10	23 24 54.64	9.194	3 47 9.1	+58.88	16 7.95	64.85	10 15.14	0.660
Wed.	11	23 28 35.14	9.182	3 23 34.5	58.99	16 7.68	64.80	9 59.13	0.673
Thur.	12	23 32 15.36	9.170	2 59 57.6	59.08	16 7.41	64.76	9 42.84	0.685
Frid.	13	23 35 55.30	9.159	2 36 18.5	+59.16	16 7.14	64.72	9 26.27	0.696
Sat.	14	23 39 34.98	9.149	2 12 37.9	59.22	16 6.87	64.68	9 9.44	0.706
<i>SUN.</i>	15	23 43 14.42	9.139	1 48 56.1	59.26	16 6.60	64.65	8 52.38	0.716
Mon.	16	23 46 53.64	9.130	1 25 13.4	+59.29	16 6.34	64.62	8 35.10	0.725
Tues.	17	23 50 32.65	9.122	1 1 30.3	59.30	16 6.07	64.59	8 17.60	0.733
Wed.	18	23 54 11.48	9.115	0 37 47.2	59.29	16 5.80	64.57	7 59.92	0.740
Thur.	19	23 57 50.13	9.108	S. 0 14 4.4	+59.27	16 5.53	64.55	7 42.07	0.747
Frid.	20	0 1 28.64	9.102	N. 0 9 37.6	59.23	16 5.26	64.53	7 24.07	0.753
Sat.	21	0 5 7.01	9.096	0 33 18.5	59.17	16 5.00	64.51	7 5.94	0.758
<i>SUN.</i>	22	0 8 45.27	9.092	0 56 58.0	+59.10	16 4.73	64.50	6 47.70	0.762
Mon.	23	0 12 23.44	9.089	1 20 35.7	59.02	16 4.46	64.49	6 29.36	0.766
Tues.	24	0 16 1.53	9.087	1 44 11.2	58.93	16 4.19	64.48	6 10.95	0.768
Wed.	25	0 19 39.57	9.085	2 7 44.2	+58.82	16 3.91	64.48	5 52.49	0.770
Thur.	26	0 23 17.60	9.084	2 31 14.4	58.69	16 3.64	64.48	5 34.01	0.770
Frid.	27	0 26 55.61	9.084	2 54 41.4	58.55	16 3.37	64.48	5 15.52	0.770
Sat.	28	0 30 33.64	9.086	3 18 5.0	+58.40	16 3.09	64.49	4 57.05	0.769
<i>SUN.</i>	29	0 34 11.72	9.088	3 41 24.7	58.24	16 2.81	64.50	4 38.63	0.766
Mon.	30	0 37 49.87	9.091	4 4 40.4	58.06	16 2.53	64.51	4 20.27	0.763
Tues.	31	0 41 28.10	9.095	4 27 51.6	57.87	16 2.25	64.52	4 2.00	0.759
Wed.	32	0 45 6.44	9.100	N. 4 50 58.1	+57.65	16 1.97	64.54	3 43.84	0.754

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
<i>SUN.</i>	1	h m s 22 51 32.06	s 9.344	S. ° ' " 7 16 38.0	" +57.18	m s 12 23.23	s 0.513	h m s 22 39 8.83
Mon.	2	22 55 16.06	9.324	6 53 42.6	57.43	12 10.68	0.533	22 43 5.38
Tues.	3	22 58 59.60	9.305	6 30 41.4	57.67	11 57.66	0.552	22 47 1.94
Wed.	4	23 2 42.69	9.287	6 7 34.7	+57.89	11 44.20	0.570	22 50 58.49
Thur.	5	23 6 25.36	9.270	5 44 22.8	58.09	11 30.32	0.587	22 54 55.04
Frid.	6	23 10 7.63	9.253	5 21 6.1	58.28	11 16.03	0.603	22 58 51.60
Sat.	7	23 13 49.52	9.238	4 57 45.0	+58.46	11 1.37	0.619	23 2 48.15
<i>SUN.</i>	8	23 17 31.04	9.223	4 34 19.9	58.62	10 46.34	0.634	23 6 44.71
Mon.	9	23 21 12.22	9.209	4 10 51.2	58.76	10 30.96	0.648	23 10 41.26
Tues.	10	23 24 53.07	9.196	3 47 19.2	+58.89	10 15.26	0.661	23 14 37.81
Wed.	11	23 28 33.62	9.184	3 23 44.4	59.00	9 59.25	0.673	23 18 34.37
Thur.	12	23 32 13.87	9.172	3 0 7.2	59.09	9 42.95	0.685	23 22 30.92
Frid.	13	23 35 53.85	9.161	2 36 27.9	+59.17	9 26.38	0.696	23 26 27.48
Sat.	14	23 39 33.58	9.150	2 12 47.0	59.23	9 9.55	0.706	23 30 24.03
<i>SUN.</i>	15	23 43 13.07	9.141	1 49 4.9	59.27	8 52.49	0.716	23 34 20.58
Mon.	16	23 46 52.34	9.132	1 25 21.9	+59.30	8 35.20	0.725	23 38 17.14
Tues.	17	23 50 31.39	9.124	1 1 38.5	59.31	8 17.70	0.733	23 42 13.69
Wed.	18	23 54 10.26	9.116	0 37 55.2	59.30	8 0.02	0.740	23 46 10.24
Thur.	19	23 57 48.97	9.109	S. 0 14 12.1	+59.28	7 42.17	0.747	23 50 6.80
Frid.	20	0 1 27.52	9.103	N. 0 9 30.3	59.24	7 24.17	0.753	23 54 3.35
Sat.	21	0 5 5.93	9.098	0 33 11.5	59.19	7 6.03	0.758	23 57 59.90
<i>SUN.</i>	22	0 8 44.24	9.094	0 56 51.3	+59.12	6 47.78	0.762	0 1 56.46
Mon.	23	0 12 22.45	9.091	1 20 29.3	59.03	6 29.44	0.766	0 5 53.01
Tues.	24	0 16 0.59	9.088	1 44 5.1	58.93	6 11.03	0.768	0 9 49.56
Wed.	25	0 19 38.69	9.087	2 7 38.4	+58.83	5 52.57	0.770	0 13 46.12
Thur.	26	0 23 16.75	9.086	2 31 8.9	58.71	5 34.08	0.770	0 17 42.67
Frid.	27	0 26 54.81	9.086	2 54 36.2	58.57	5 15.59	0.770	0 21 39.22
Sat.	28	0 30 32.90	9.088	3 18 0.1	+58.42	4 57.12	0.769	0 25 35.78
<i>SUN.</i>	29	0 34 11.02	9.090	3 41 20.2	58.25	4 38.69	0.767	0 29 32.33
Mon.	30	0 37 49.21	9.093	4 4 36.2	58.07	4 20.32	0.763	0 33 28.88
Tues.	31	0 41 27.49	9.097	4 27 47.7	57.88	4 2.05	0.759	0 37 25.44
Wed.	32	0 45 5.88	9.102	N. 4 50 54.5	+57.68	3 43.89	0.754	0 41 21.99

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

Diff. for 1 Hour
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	61	341 26 57.3	26 40.7	150.32	— 0.33	9.9962753	+46.2	h m s 1 20 37.92
2	62	342 27 4.1	26 47.4	150.25	0.44	9.9963869	46.9	1 16 42.02
3	63	343 27 9.4	26 52.6	150.19	0.53	9.9965001	47.5	1 12 46.11
4	64	344 27 13.0	26 56.0	150.12	— 0.59	9.9966148	+48.0	1 8 50.20
5	65	345 27 14.9	26 57.8	150.05	0.62	9.9967307	48.5	1 4 54.29
6	66	346 27 15.3	26 58.1	149.98	0.62	9.9968477	48.9	1 0 58.38
7	67	347 27 14.0	26 56.7	149.91	— 0.60	9.9969657	+49.3	0 57 2.48
8	68	348 27 11.1	26 53.7	149.84	0.55	9.9970845	49.6	0 53 6.57
9	69	349 27 6.6	26 49.0	149.77	0.46	9.9972040	49.8	0 49 10.66
10	70	350 27 0.3	26 42.6	149.70	— 0.35	9.9973239	+50.0	0 45 14.75
11	71	351 26 52.4	26 34.6	149.63	0.24	9.9974440	50.1	0 41 18.84
12	72	352 26 42.6	26 24.7	149.55	— 0.12	9.9975644	50.2	0 37 22.94
13	73	353 26 31.0	26 13.0	149.47	+ 0.02	9.9976849	+50.3	0 33 27.03
14	74	354 26 17.4	25 59.3	149.39	0.15	9.9978055	50.2	0 29 31.12
15	75	355 26 1.8	25 43.6	149.31	0.25	9.9979261	50.2	0 25 35.21
16	76	356 25 44.2	25 25.9	149.22	+ 0.35	9.9980466	+50.2	0 21 39.31
17	77	357 25 24.4	25 6.0	149.13	0.43	9.9981671	50.2	0 17 43.40
18	78	358 25 2.4	24 43.9	149.04	0.48	9.9982874	50.2	0 13 47.49
19	79	359 24 38.3	24 19.7	148.95	+ 0.50	9.9984079	+50.2	0 9 51.58
20	80	0 24 11.8	23 53.1	148.85	0.49	9.9985286	50.3	0 5 55.68
21	81	1 23 42.9	23 24.1	148.75	0.44	9.9986495	50.4	{ 0 1 59.77 } { 23 58 3.86 }
22	82	2 23 11.8	22 52.9	148.65	+ 0.38	9.9987707	+50.6	23 54 7.95
23	83	3 22 38.3	22 19.3	148.56	0.29	9.9988922	50.8	23 50 12.04
24	84	4 22 2.5	21 43.4	148.46	0.16	9.9990142	51.0	23 46 16.14
25	85	5 21 24.4	21 5.2	148.37	+ 0.03	9.9991368	+51.2	23 42 20.23
26	86	6 20 44.1	20 24.8	148.28	— 0.10	9.9992599	51.4	23 38 24.32
27	87	7 20 1.6	19 42.2	148.18	0.23	9.9993837	51.7	23 34 28.41
28	88	8 19 16.9	18 57.4	148.09	— 0.36	9.9995082	+52.0	23 30 32.51
29	89	9 18 30.1	18 10.4	148.01	0.47	9.9996334	52.3	23 26 36.60
30	90	10 17 41.3	17 21.5	147.93	0.56	9.9997593	52.6	23 22 40.69
31	91	11 16 50.5	16 30.6	147.85	0.63	9.9998858	52.8	23 18 44.78
32	92	12 15 57.9	15 37.9	147.77	— 0.68	0.0000126	+52.9	23 14 48.87
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st .								Diff. for 1 Hour, —9 ^h .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.									
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	16 41.5	16 38.2	61 9.2	-0.82	60 57.1	-1.18	14 4.6	2.17	16.8
2	16 33.9	16 28.6	60 41.0	1.48	60 21.6	1.73	14 57.3	2.23	17.8
3	16 22.5	16 15.9	59 59.4	1.94	59 35.1	2.08	15 51.9	2.32	18.8
4	16 8.9	16 1.7	59 9.4	-2.17	58 43.0	-2.21	16 48.6	2.40	19.8
5	15 54.5	15 47.3	58 16.3	2.21	57 50.0	2.16	17 46.6	2.43	20.8
6	15 40.3	15 33.6	57 24.4	2.09	56 59.8	1.99	18 44.4	2.38	21.8
7	15 27.3	15 21.4	56 36.6	-1.88	56 14.8	-1.75	19 40.4	2.27	22.8
8	15 15.9	15 10.9	55 54.6	1.61	55 36.2	1.47	20 33.0	2.11	23.8
9	15 6.3	15 2.2	55 19.4	1.33	55 4.3	1.19	21 21.8	1.95	24.8
10	14 58.5	14 55.3	54 50.9	-1.05	54 39.1	-0.92	22 7.0	1.81	25.8
11	14 52.5	14 50.1	54 28.9	0.79	54 20.1	0.68	22 49.2	1.71	26.8
12	14 48.1	14 46.5	54 12.7	0.55	54 6.8	0.44	23 29.3	1.64	27.8
13	14 45.2	14 44.3	54 2.1	-0.33	53 58.8	-0.23	6		28.8
14	14 43.8	14 43.6	53 56.7	-0.12	53 55.9	-0.01	0 8.3	1.62	0.1
15	14 43.7	14 44.2	53 56.4	+0.10	53 58.2	+0.21	0 47.2	1.63	1.1
16	14 45.1	14 46.4	54 1.5	+0.33	54 6.2	+0.46	1 27.0	1.69	2.1
17	14 48.1	14 50.2	54 12.5	0.59	54 20.4	0.73	2 8.6	1.78	3.1
18	14 52.8	14 56.0	54 30.0	0.88	54 41.5	1.03	2 52.9	1.91	4.1
19	14 59.6	15 3.8	54 54.8	+1.19	55 10.1	+1.35	3 40.7	2.07	5.1
20	15 8.4	15 13.7	55 27.3	1.52	55 46.5	1.68	4 32.1	2.22	6.1
21	15 19.4	15 25.6	56 7.6	1.83	56 30.5	1.98	5 26.8	2.33	7.1
22	15 32.3	15 39.4	56 55.1	+2.11	57 21.1	+2.22	6 23.6	2.39	8.1
23	15 46.8	15 54.4	57 48.3	2.30	58 16.2	2.34	7 20.9	2.38	9.1
24	16 2.1	16 9.7	58 44.4	2.34	59 12.3	2.29	8 17.3	2.31	10.1
25	16 17.1	16 24.0	59 39.3	+2.18	60 4.7	+2.02	9 11.9	2.23	11.1
26	16 30.3	16 35.8	60 27.8	1.80	60 48.0	1.53	10 4.7	2.17	12.1
27	16 40.2	16 43.5	61 4.4	1.19	61 16.5	+0.81	10 56.5	2.15	13.1
28	16 45.5	16 46.2	61 23.8	+0.40	61 26.1	-0.02	11 48.2	2.17	14.1
29	16 45.4	16 43.2	61 23.3	-0.45	61 15.5	0.87	12 41.2	2.25	15.1
30	16 39.8	16 35.2	61 2.8	1.24	60 45.8	1.58	13 36.5	2.36	16.1
31	16 29.5	16 23.0	60 24.9	1.86	60 1.1	2.09	14 34.3	2.46	17.1
32	16 15.8	16 8.2	59 34.8	-2.26	59 6.9	-2.37	15 34.2	2.52	18.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 1.					TUESDAY 3.				
0	h m s	a	° ' "	"	0	h m s	a	° ' "	"
1	12 14 27.91	2.2371	S. 4 35 3.9	17.743	1	14 3 55.35	2.3447	S. 17 31 34.1	13.933
2	12 16 42.16	2.2378	4 52 47.4	17.707	2	14 6 16.13	2.3480	17 45 26.5	13.813
3	12 18 56.45	2.2386	5 10 28.7	17.668	3	14 8 37.11	2.3513	17 59 11.7	13.692
4	12 21 10.79	2.2395	5 28 7.6	17.628	4	14 10 58.29	2.3547	18 12 49.5	13.568
5	12 23 25.19	2.2406	5 45 44.1	17.587	5	14 13 19.67	2.3580	18 26 19.8	13.443
6	12 25 39.66	2.2417	6 3 18.0	17.543	6	14 15 41.25	2.3614	18 39 42.7	13.318
7	12 27 54.19	2.2428	6 20 49.2	17.497	7	14 18 3.04	2.3648	18 52 58.0	13.191
8	12 30 8.79	2.2440	6 38 17.6	17.449	8	14 20 25.03	2.3682	19 6 5.6	13.066
9	12 32 23.47	2.2452	6 55 43.1	17.399	9	14 22 47.22	2.3715	19 19 5.5	12.932
10	12 34 38.22	2.2466	7 13 5.5	17.347	10	14 25 9.61	2.3748	19 31 57.5	12.801
11	12 36 53.06	2.2481	7 30 24.8	17.294	11	14 27 32.20	2.3782	19 44 41.6	12.668
12	12 39 7.99	2.2496	7 47 40.8	17.239	12	14 29 55.00	2.3816	19 57 17.7	12.534
13	12 41 23.01	2.2512	8 4 53.5	17.182	13	14 32 18.00	2.3850	20 9 45.7	12.399
14	12 43 38.13	2.2528	8 22 2.6	17.122	14	14 34 41.20	2.3883	20 22 5.6	12.266
15	12 45 53.35	2.2545	8 39 8.1	17.061	15	14 37 4.60	2.3917	20 34 17.2	12.134
16	12 48 8.67	2.2563	8 56 9.9	16.997	16	14 39 28.21	2.3951	20 46 20.5	11.986
17	12 50 24.10	2.2581	9 13 7.8	16.932	17	14 41 52.02	2.3984	20 58 15.5	11.846
18	12 52 39.64	2.2599	9 30 1.8	16.866	18	14 44 16.02	2.4017	21 10 2.0	11.704
19	12 54 55.29	2.2618	9 46 51.7	16.797	19	14 46 40.22	2.4050	21 21 40.0	11.562
20	12 57 11.06	2.2639	10 3 37.4	16.726	20	14 49 4.62	2.4082	21 33 9.4	11.418
21	12 59 26.96	2.2661	10 20 18.8	16.654	21	14 51 29.21	2.4115	21 44 30.1	11.273
22	13 1 42.99	2.2682	10 36 55.9	16.581	22	14 53 54.00	2.4147	21 55 42.2	11.128
23	13 3 59.15	2.2704	10 53 28.5	16.504	23	14 56 18.98	2.4179	22 6 45.5	10.981
24	13 6 15.44	2.2727	S. 11 9 56.4	16.426	24	14 58 44.15	2.4210	S. 22 17 39.9	10.832
MONDAY 2.					WEDNESDAY 4.				
0	h m s	a	° ' "	"	0	h m s	a	° ' "	"
1	13 8 31.87	2.2750	S. 11 26 19.6	16.347	1	15 1 9.50	2.4241	S. 22 28 25.4	10.683
2	13 10 48.44	2.2774	11 42 38.0	16.265	2	15 3 35.04	2.4272	22 39 1.9	10.533
3	13 13 5.16	2.2798	11 58 51.4	16.182	3	15 6 0.77	2.4303	22 49 29.4	10.382
4	13 15 22.02	2.2823	12 14 59.8	16.097	4	15 8 26.68	2.4333	22 59 47.8	10.230
5	13 17 39.04	2.2849	12 31 3.1	16.011	5	15 10 52.77	2.4363	23 9 57.0	10.077
6	13 19 56.21	2.2875	12 47 1.1	15.922	6	15 13 19.04	2.4393	23 19 57.0	9.922
7	13 22 13.54	2.2901	13 2 53.8	15.832	7	15 15 45.49	2.4422	23 29 47.7	9.767
8	13 24 31.03	2.2928	13 18 41.0	15.741	8	15 18 12.11	2.4450	23 39 29.1	9.612
9	13 26 48.68	2.2956	13 34 22.7	15.647	9	15 20 38.89	2.4477	23 49 1.1	9.455
10	13 29 6.50	2.2984	13 49 58.7	15.552	10	15 23 5.84	2.4505	23 58 23.7	9.297
11	13 31 24.49	2.3012	14 5 29.0	15.456	11	15 25 32.95	2.4532	24 7 36.8	9.138
12	13 33 42.65	2.3041	14 20 53.4	15.357	12	15 28 0.22	2.4557	24 16 40.3	8.979
13	13 36 0.98	2.3070	14 36 11.9	15.257	13	15 30 27.64	2.4582	24 25 34.3	8.820
14	13 38 19.49	2.3100	14 51 24.3	15.156	14	15 32 55.21	2.4607	24 34 18.7	8.659
15	13 40 38.18	2.3130	15 6 30.6	15.052	15	15 35 22.93	2.4632	24 42 53.4	8.497
16	13 42 57.05	2.3161	15 21 30.6	14.947	16	15 37 50.80	2.4656	24 51 18.3	8.334
17	13 45 16.11	2.3192	15 36 24.3	14.841	17	15 40 18.80	2.4678	24 59 33.5	8.171
18	13 47 35.35	2.3222	15 51 11.5	14.733	18	15 42 46.94	2.4701	25 7 38.9	8.008
19	13 49 54.77	2.3253	16 5 52.2	14.623	19	15 45 15.21	2.4722	25 15 34.5	7.844
20	13 52 14.38	2.3285	16 20 26.3	14.512	20	15 47 43.60	2.4742	25 23 20.2	7.679
21	13 54 34.19	2.3317	16 34 53.7	14.399	21	15 50 12.12	2.4762	25 30 56.0	7.513
22	13 56 54.19	2.3349	16 49 14.2	14.284	22	15 52 40.75	2.4781	25 38 21.8	7.347
23	13 59 14.38	2.3382	17 3 27.8	14.169	23	15 55 9.49	2.4799	25 45 37.6	7.180
24	14 1 34.77	2.3414	17 17 34.5	14.052	24	15 57 38.34	2.4817	25 52 43.4	7.013
	14 3 55.35	2.3447	S. 17 31 34.1	13.933		16 0 7.29	2.4832	S. 25 59 39.2	6.846

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 5.					SATURDAY 7.				
0	h m s		S. 25 59 39.2	6.846	0	h m s		S. 28 11 58.9	1.272
1	16 0 7.29	2.4832	26 6 24.9	6.678	1	17 59 14.99	2.4379	28 10 37.8	1.432
2	16 2 36.33	2.4848	26 13 0.5	6.509	2	18 1 41.16	2.4348	28 9 7.1	1.591
3	16 5 5.47	2.4863	26 19 26.0	6.340	3	18 4 7.10	2.4305	28 7 26.9	1.749
4	16 7 34.69	2.4877	26 25 41.3	6.170	4	18 6 32.82	2.4267	28 5 37.2	1.907
5	16 10 3.99	2.4890	26 31 46.4	6.001	5	18 8 58.31	2.4227	28 3 38.0	2.065
6	16 12 33.37	2.4902	26 37 41.4	5.831	6	18 11 23.55	2.4187	28 1 29.4	2.221
7	16 15 2.81	2.4912	26 43 26.1	5.660	7	18 13 48.55	2.4146	27 59 11.5	2.377
8	16 17 32.31	2.4922	26 49 0.6	5.489	8	18 16 13.30	2.4104	27 56 44.2	2.532
9	16 20 1.87	2.4932	26 54 24.8	5.318	9	18 18 37.80	2.4062	27 54 7.7	2.685
10	16 22 31.49	2.4940	26 59 38.8	5.147	10	18 21 2.04	2.4018	27 51 22.0	2.838
11	16 25 1.15	2.4946	27 4 42.5	4.976	11	18 23 26.02	2.3974	27 48 27.1	2.991
12	16 27 30.84	2.4951	27 9 35.9	4.804	12	18 25 49.73	2.3928	27 45 23.1	3.142
13	16 30 0.56	2.4956	27 14 19.0	4.632	13	18 28 13.16	2.3882	27 42 10.1	3.292
14	16 32 30.31	2.4960	27 18 51.8	4.461	14	18 30 36.31	2.3835	27 38 48.1	3.441
15	16 35 0.08	2.4962	27 23 14.3	4.289	15	18 32 59.18	2.3788	27 35 17.2	3.589
16	16 37 29.86	2.4963	27 27 26.5	4.117	16	18 35 21.77	2.3740	27 31 37.4	3.737
17	16 39 59.64	2.4963	27 31 28.3	3.944	17	18 37 44.06	2.3690	27 27 48.8	3.883
18	16 42 29.42	2.4963	27 35 19.8	3.772	18	18 40 6.05	2.3640	27 23 51.4	4.029
19	16 44 59.20	2.4962	27 39 1.0	3.601	19	18 42 27.74	2.3589	27 19 45.3	4.173
20	16 47 28.96	2.4958	27 42 31.9	3.428	20	18 44 49.12	2.3537	27 15 30.6	4.317
21	16 49 58.70	2.4955	27 45 52.4	3.256	21	18 47 10.19	2.3487	27 11 7.3	4.459
22	16 52 28.42	2.4950	27 49 2.6	3.085	22	18 49 30.96	2.3435	27 6 35.5	4.601
23	16 54 58.10	2.4943	S. 27 52 2.6	2.913	23	18 51 51.41	2.3382	S. 27 1 55.2	4.742
24	16 57 27.74	2.4935				18 54 11.54	2.3327		
FRIDAY 6.					SUNDAY 8.				
0	h m s		S. 27 54 52.2	2.741	0	h m s		S. 26 57 6.5	4.881
1	16 59 57.32	2.4926	27 57 31.5	2.570	1	18 56 31.34	2.3273	26 52 9.5	5.019
2	17 2 26.85	2.4917	28 0 0.6	2.399	2	18 58 50.82	2.3219	26 47 4.2	5.156
3	17 4 56.32	2.4906	28 2 19.4	2.228	3	19 1 9.97	2.3163	26 41 50.8	5.291
4	17 7 25.72	2.4894	28 4 27.9	2.057	4	19 3 28.78	2.3107	26 36 29.3	5.426
5	17 9 55.05	2.4881	28 6 26.2	1.886	5	19 5 47.26	2.3052	26 30 59.7	5.561
6	17 12 24.29	2.4866	28 8 14.2	1.715	6	19 8 5.40	2.2995	26 25 22.0	5.694
7	17 14 53.44	2.4850	28 9 52.0	1.546	7	19 10 23.20	2.2938	26 19 36.4	5.826
8	17 17 22.49	2.4833	28 11 19.7	1.377	8	19 12 40.66	2.2881	26 13 42.9	5.956
9	17 19 51.44	2.4816	28 12 37.2	1.208	9	19 14 57.77	2.2822	26 7 41.7	6.085
10	17 22 20.28	2.4797	28 13 44.6	1.039	10	19 17 14.53	2.2764	26 1 32.7	6.214
11	17 24 49.00	2.4777	28 14 41.9	0.870	11	19 19 30.94	2.2706	25 55 16.0	6.342
12	17 27 17.60	2.4755	28 15 29.0	0.702	12	19 21 47.00	2.2647	25 48 51.7	6.468
13	17 29 46.06	2.4732	28 16 6.1	0.535	13	19 24 2.70	2.2587	25 42 19.9	6.593
14	17 32 14.38	2.4708	28 16 33.2	0.368	14	19 26 18.04	2.2527	25 35 40.6	6.717
15	17 34 42.56	2.4684	28 16 50.2	0.201	15	19 28 33.03	2.2469	25 28 53.9	6.839
16	17 37 10.59	2.4658	28 16 57.3	-0.035	16	19 30 47.67	2.2410	25 21 59.9	6.961
17	17 39 38.46	2.4632	28 16 54.4	+0.131	17	19 33 1.95	2.2349	25 14 58.6	7.082
18	17 42 6.17	2.4604	28 16 41.6	0.295	18	19 35 15.86	2.2288	25 7 50.1	7.201
19	17 44 33.71	2.4575	28 16 19.0	0.459	19	19 37 29.41	2.2227	25 0 34.5	7.319
20	17 47 1.07	2.4545	28 15 46.5	0.623	20	19 39 42.59	2.2167	24 53 11.8	7.437
21	17 49 28.25	2.4513	28 15 4.2	0.786	21	19 41 55.41	2.2107	24 45 42.1	7.553
22	17 51 55.23	2.4481	28 14 12.2	0.948	22	19 44 7.87	2.2046	24 38 5.5	7.667
23	17 54 22.02	2.4448	28 13 10.4	1.111	23	19 46 19.96	2.1984	24 30 22.0	7.781
24	17 56 48.61	2.4414	S. 28 11 58.9	1.272	24	19 48 31.68	2.1923		
	17 59 14.99	2.4379				19 50 43.04	2.1862		

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 9.					WEDNESDAY 11.				
0	19 50 43.04	2.1862	S. 24 22 31.8	7.893	0	21 28 54.05	1.9168	S. 16 15 38.8	11.974
1	19 52 54.03	2.1801	24 14 34.9	8.004	1	21 30 48.92	1.9122	16 3 38.6	12.033
2	19 55 4.65	2.1740	24 6 31.3	8.115	2	21 32 43.51	1.9076	15 51 34.8	12.092
3	19 57 14.91	2.1679	23 58 21.1	8.224	3	21 34 37.83	1.9031	15 39 27.5	12.150
4	19 59 24.80	2.1617	23 50 4.4	8.332	4	21 36 31.88	1.8986	15 27 16.8	12.206
5	20 1 34.32	2.1557	23 41 41.3	8.438	5	21 38 25.66	1.8941	15 15 2.8	12.261
6	20 3 43.48	2.1496	23 33 11.9	8.543	6	21 40 19.17	1.8897	15 2 45.5	12.313
7	20 5 52.27	2.1434	23 24 36.2	8.648	7	21 42 12.43	1.8853	14 50 25.0	12.368
8	20 8 0.69	2.1373	23 15 54.2	8.751	8	21 44 5.43	1.8812	14 38 1.3	12.421
9	20 10 8.75	2.1313	23 7 6.1	8.853	9	21 45 58.17	1.8769	14 25 34.5	12.472
10	20 12 16.45	2.1252	22 58 11.9	8.954	10	21 47 50.66	1.8728	14 13 4.6	12.523
11	20 14 23.78	2.1192	22 49 11.6	9.054	11	21 49 42.91	1.8688	14 0 31.7	12.573
12	20 16 30.75	2.1131	22 40 5.4	9.152	12	21 51 34.92	1.8648	13 47 55.8	12.622
13	20 18 37.35	2.1071	22 30 53.3	9.250	13	21 53 26.69	1.8608	13 35 17.0	12.670
14	20 20 43.60	2.1012	22 21 35.4	9.346	14	21 55 18.22	1.8569	13 22 35.4	12.716
15	20 22 49.49	2.0952	22 12 11.8	9.441	15	21 57 9.52	1.8531	13 9 51.1	12.762
16	20 24 55.02	2.0892	22 2 42.5	9.536	16	21 59 0.59	1.8493	12 57 4.0	12.807
17	20 27 0.19	2.0832	21 53 7.5	9.629	17	22 0 51.44	1.8456	12 44 14.2	12.852
18	20 29 5.01	2.0773	21 43 27.0	9.720	18	22 2 42.06	1.8419	12 31 21.7	12.896
19	20 31 9.47	2.0714	21 33 41.1	9.811	19	22 4 32.47	1.8383	12 18 26.7	12.938
20	20 33 13.58	2.0656	21 23 49.7	9.901	20	22 6 22.66	1.8347	12 5 29.2	12.979
21	20 35 17.34	2.0597	21 13 53.0	9.989	21	22 8 12.64	1.8312	11 52 29.2	13.020
22	20 37 20.75	2.0539	21 3 51.0	10.077	22	22 10 2.41	1.8278	11 39 26.8	13.060
23	20 39 23.81	2.0481	S. 20 53 43.8	10.165	23	22 11 51.98	1.8245	S. 11 26 22.0	13.099
TUESDAY 10.					THURSDAY 12.				
0	20 41 26.52	2.0423	S. 20 43 31.4	10.249	0	22 13 41.35	1.8212	S. 11 13 14.9	13.137
1	20 43 28.89	2.0367	20 33 13.9	10.333	1	22 15 30.52	1.8179	11 0 5.6	13.174
2	20 45 30.92	2.0310	20 22 51.5	10.415	2	22 17 19.50	1.8148	10 46 54.0	13.211
3	20 47 32.61	2.0253	20 12 24.1	10.497	3	22 19 8.30	1.8117	10 33 40.3	13.246
4	20 49 33.96	2.0197	20 1 51.8	10.578	4	22 20 56.91	1.8087	10 20 24.5	13.281
5	20 51 34.98	2.0142	19 51 14.7	10.657	5	22 22 45.34	1.8057	10 7 6.6	13.314
6	20 53 35.67	2.0087	19 40 32.9	10.736	6	22 24 33.59	1.8027	9 53 46.8	13.347
7	20 55 36.03	2.0032	19 29 46.4	10.814	7	22 26 21.66	1.7998	9 40 25.0	13.379
8	20 57 36.06	1.9977	19 18 55.2	10.891	8	22 28 9.57	1.7971	9 27 1.3	13.411
9	20 59 35.76	1.9923	19 7 59.5	10.966	9	22 29 57.31	1.7943	9 13 35.7	13.442
10	21 1 35.14	1.9870	18 56 59.3	11.041	10	22 31 44.89	1.7917	9 0 8.3	13.471
11	21 3 34.20	1.9817	18 45 54.6	11.114	11	22 33 32.31	1.7891	8 46 39.2	13.499
12	21 5 32.94	1.9764	18 34 45.6	11.186	12	22 35 19.58	1.7866	8 33 8.4	13.527
13	21 7 31.37	1.9712	18 23 32.3	11.257	13	22 37 6.70	1.7841	8 19 35.9	13.554
14	21 9 29.48	1.9659	18 12 14.7	11.328	14	22 38 53.67	1.7816	8 6 1.9	13.580
15	21 11 27.28	1.9608	18 0 52.9	11.397	15	22 40 40.49	1.7792	7 52 26.3	13.606
16	21 13 24.78	1.9557	17 49 27.0	11.466	16	22 42 27.17	1.7769	7 38 49.2	13.631
17	21 15 21.97	1.9507	17 37 57.0	11.532	17	22 44 13.72	1.7747	7 25 10.6	13.655
18	21 17 18.86	1.9457	17 26 23.1	11.598	18	22 46 0.14	1.7726	7 11 30.6	13.678
19	21 19 15.45	1.9407	17 14 45.2	11.664	19	22 47 46.43	1.7705	6 57 49.2	13.700
20	21 21 11.75	1.9358	17 3 3.4	11.727	20	22 49 32.60	1.7684	6 44 6.6	13.721
21	21 23 7.75	1.9310	16 51 17.9	11.790	21	22 51 18.64	1.7664	6 30 22.7	13.742
22	21 25 3.47	1.9262	16 39 28.6	11.853	22	22 53 4.57	1.7646	6 16 37.5	13.762
23	21 26 58.90	1.9215	16 27 35.5	11.915	23	22 54 50.39	1.7627	6 2 51.2	13.781
24	21 28 54.05	1.9168	S. 16 15 38.8	11.974	24	22 56 36.10	1.7609	S. 5 49 3.8	13.799

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 13.					SUNDAY 15.				
0	22 56 36.10	1.7609	S. 5 49 3.8	13.799	0	20 18.83	1.7519	N. 5 19 51.7	13.762
1	22 58 21.70	1.7592	5 35 15.3	13.817	1	0 22 3.99	1.7533	5 33 38.1	13.763
2	23 0 7.21	1.7576	5 21 25.7	13.834	2	0 23 49.23	1.7547	5 47 23.3	13.744
3	23 1 52.62	1.7560	5 7 35.2	13.849	3	0 25 34.56	1.7562	6 1 7.4	13.725
4	23 3 37.93	1.7545	4 53 43.8	13.864	4	0 27 19.98	1.7576	6 14 50.3	13.703
5	23 5 23.16	1.7531	4 39 51.5	13.879	5	0 29 5.50	1.7595	6 28 31.8	13.681
6	23 7 8.30	1.7517	4 25 58.3	13.893	6	0 30 51.12	1.7613	6 42 12.0	13.658
7	23 8 53.36	1.7503	4 12 4.3	13.906	7	0 32 36.85	1.7631	6 55 50.8	13.635
8	23 10 38.34	1.7491	3 58 9.6	13.918	8	0 34 22.69	1.7649	7 9 28.2	13.612
9	23 12 23.25	1.7479	3 44 14.2	13.929	9	0 36 8.63	1.7667	7 23 4.2	13.586
10	23 14 8.09	1.7467	3 30 18.1	13.940	10	0 37 54.69	1.7687	7 36 38.6	13.560
11	23 15 52.86	1.7457	3 16 21.4	13.950	11	0 39 40.87	1.7707	7 50 11.4	13.534
12	23 17 37.57	1.7447	3 2 24.1	13.959	12	0 41 27.18	1.7728	8 3 42.7	13.507
13	23 19 22.22	1.7437	2 48 26.3	13.967	13	0 43 13.61	1.7749	8 17 12.3	13.479
14	23 21 6.82	1.7429	2 34 28.1	13.974	14	0 45 0.17	1.7772	8 30 40.2	13.450
15	23 22 51.37	1.7422	2 20 29.4	13.981	15	0 46 46.87	1.7795	8 44 6.3	13.420
16	23 24 35.88	1.7414	2 6 30.3	13.987	16	0 48 33.71	1.7818	8 57 30.6	13.389
17	23 26 20.34	1.7407	1 52 30.9	13.992	17	0 50 20.69	1.7843	9 10 53.0	13.358
18	23 28 4.76	1.7401	1 38 31.3	13.996	18	0 52 7.81	1.7867	9 24 13.6	13.327
19	23 29 49.15	1.7396	1 24 31.4	14.000	19	0 53 55.09	1.7892	9 37 32.2	13.294
20	23 31 33.51	1.7391	1 10 31.3	14.003	20	0 55 42.52	1.7917	9 50 48.9	13.261
21	23 33 17.84	1.7387	0 56 31.0	14.006	21	0 57 30.10	1.7943	10 4 3.5	13.226
22	23 35 2.15	1.7383	0 42 30.6	14.007	22	0 59 17.84	1.7971	10 17 16.0	13.191
23	23 36 46.44	1.7380	S. 0 28 30.2	14.008	23	1 1 5.75	1.7999	N. 10 30 26.4	13.155
SATURDAY 14.					MONDAY 16.				
0	23 38 30.71	1.7378	S. 0 14 29.7	14.008	0	1 2 53.83	1.8028	N. 10 43 34.6	13.118
1	23 40 14.97	1.7377	S. 0 0 29.2	14.007	1	1 4 42.08	1.8057	10 56 40.6	13.081
2	23 41 59.23	1.7376	N. 0 13 31.2	14.006	2	1 6 30.51	1.8086	11 9 44.3	13.042
3	23 43 43.48	1.7375	0 27 31.5	14.003	3	1 8 19.11	1.8116	11 22 45.6	13.002
4	23 45 27.73	1.7376	0 41 31.6	14.000	4	1 10 7.90	1.8147	11 35 44.5	12.962
5	23 47 11.99	1.7377	0 55 31.5	13.997	5	1 11 56.88	1.8178	11 48 41.1	12.922
6	23 48 56.25	1.7378	1 9 31.2	13.992	6	1 13 46.04	1.8210	12 1 35.2	12.880
7	23 50 40.52	1.7380	1 23 30.6	13.987	7	1 15 35.40	1.8243	12 14 26.7	12.837
8	23 52 24.81	1.7384	1 37 29.6	13.981	8	1 17 24.96	1.8276	12 27 15.7	12.794
9	23 54 9.13	1.7388	1 51 28.3	13.974	9	1 19 14.71	1.8309	12 40 2.0	12.749
10	23 55 53.47	1.7392	2 5 26.5	13.966	10	1 21 4.67	1.8344	12 52 45.6	12.704
11	23 57 37.84	1.7397	2 19 24.2	13.958	11	1 22 54.84	1.8379	13 5 26.5	12.659
12	23 59 22.23	1.7402	2 33 21.5	13.950	12	1 24 45.22	1.8415	13 18 4.7	12.612
13	0 1 6.66	1.7408	2 47 18.2	13.940	13	1 26 35.82	1.8451	13 30 40.0	12.564
14	0 2 51.13	1.7415	3 1 14.3	13.929	14	1 28 26.63	1.8487	13 43 12.4	12.516
15	0 4 35.64	1.7422	3 15 9.7	13.918	15	1 30 17.66	1.8523	13 55 41.9	12.467
16	0 6 20.20	1.7431	3 29 4.4	13.906	16	1 32 8.91	1.8562	14 8 8.4	12.417
17	0 8 4.81	1.7440	3 42 58.4	13.893	17	1 34 0.40	1.8601	14 20 31.9	12.365
18	0 9 49.48	1.7449	3 56 51.6	13.880	18	1 35 52.12	1.8640	14 32 52.2	12.313
19	0 11 34.20	1.7459	4 10 44.0	13.866	19	1 37 44.08	1.8679	14 45 9.4	12.260
20	0 13 18.99	1.7470	4 24 35.5	13.850	20	1 39 36.27	1.8718	14 57 23.4	12.206
21	0 15 3.84	1.7481	4 38 26.0	13.834	21	1 41 28.70	1.8759	15 9 34.1	12.152
22	0 16 48.76	1.7493	4 52 15.6	13.818	22	1 43 21.38	1.8801	15 21 41.5	12.096
23	0 18 33.76	1.7506	5 6 4.2	13.801	23	1 45 14.31	1.8843	15 33 45.6	12.040
24	0 20 18.83	1.7519	N. 5 19 51.7	13.782	24	1 47 7.49	1.8885	N. 15 45 46.3	11.982

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 17.					THURSDAY 19.				
0	1 47 7.49	1.8885	N. 15 45 46.3	11.982	0	3 23 29.69	2.1400	N. 23 56 36.6	8.082
1	1 49 0.93	1.8928	15 57 43.5	11.924	1	3 25 38.27	2.1459	24 4 38.3	7.975
2	1 50 54.63	1.8971	16 9 37.2	11.865	2	3 27 47.20	2.1517	24 12 33.6	7.867
3	1 52 48.58	1.9014	16 21 27.3	11.804	3	3 29 56.48	2.1576	24 20 22.4	7.759
4	1 54 42.79	1.9058	16 33 13.7	11.743	4	3 32 6.11	2.1634	24 28 4.7	7.649
5	1 56 37.28	1.9104	16 44 56.5	11.681	5	3 34 16.09	2.1692	24 35 40.3	7.538
6	1 58 32.04	1.9149	16 56 35.5	11.618	6	3 36 26.42	2.1751	24 43 9.2	7.426
7	2 0 27.07	1.9195	17 8 10.7	11.555	7	3 38 37.10	2.1809	24 50 31.4	7.312
8	2 2 22.38	1.9242	17 19 42.1	11.491	8	3 40 48.13	2.1867	24 57 46.7	7.197
9	2 4 17.97	1.9288	17 31 9.6	11.428	9	3 42 59.51	2.1926	25 4 55.1	7.082
10	2 6 13.84	1.9336	17 42 33.1	11.368	10	3 45 11.24	2.1984	25 11 56.6	6.967
11	2 8 10.00	1.9383	17 53 52.6	11.300	11	3 47 23.32	2.2042	25 18 51.1	6.849
12	2 10 6.44	1.9431	18 5 7.9	11.231	12	3 49 35.74	2.2099	25 25 38.5	6.730
13	2 12 3.17	1.9480	18 16 19.1	11.162	13	3 51 48.51	2.2156	25 32 18.7	6.611
14	2 14 0.20	1.9530	18 27 26.1	11.092	14	3 54 1.62	2.2213	25 38 51.8	6.491
15	2 15 57.53	1.9579	18 38 28.9	11.021	15	3 56 15.07	2.2271	25 45 17.6	6.369
16	2 17 55.15	1.9628	18 49 27.4	10.950	16	3 58 28.87	2.2328	25 51 36.1	6.247
17	2 19 53.07	1.9679	19 0 21.5	10.884	17	4 0 43.01	2.2384	25 57 47.2	6.123
18	2 21 51.30	1.9730	19 11 11.1	10.819	18	4 2 57.48	2.2440	26 3 50.8	5.998
19	2 23 49.83	1.9781	19 21 56.2	10.754	19	4 5 12.29	2.2497	26 9 46.9	5.872
20	2 25 48.67	1.9833	19 32 36.8	10.688	20	4 7 27.44	2.2553	26 15 35.4	5.744
21	2 27 47.83	1.9886	19 43 12.8	10.621	21	4 9 42.92	2.2608	26 21 16.2	5.616
22	2 29 47.30	1.9938	19 53 44.1	10.552	22	4 11 58.74	2.2663	26 26 49.3	5.487
23	2 31 47.08	1.9990	N. 20 4 10.7	10.482	23	4 14 14.88	2.2718	N. 26 32 14.7	5.357
WEDNESDAY 18.					FRIDAY 20.				
0	2 33 47.18	2.0043	N. 20 14 32.4	10.412	0	4 16 31.35	2.2772	N. 26 37 32.2	5.226
1	2 35 47.60	2.0097	20 24 49.3	10.341	1	4 18 48.15	2.2826	26 42 41.8	5.094
2	2 37 48.35	2.0152	20 35 1.3	10.269	2	4 21 5.27	2.2879	26 47 43.4	4.961
3	2 39 49.42	2.0206	20 45 8.4	10.197	3	4 23 22.70	2.2932	26 52 37.1	4.827
4	2 41 50.82	2.0260	20 55 10.5	9.992	4	4 25 40.45	2.2984	26 57 22.7	4.692
5	2 43 52.54	2.0314	21 5 7.4	9.905	5	4 27 58.51	2.3037	27 2 0.1	4.555
6	2 45 54.59	2.0370	21 14 59.1	9.818	6	4 30 16.89	2.3089	27 6 29.3	4.418
7	2 47 56.98	2.0426	21 24 45.6	9.731	7	4 32 35.58	2.3139	27 10 50.3	4.280
8	2 49 59.70	2.0481	21 34 26.9	9.643	8	4 34 54.56	2.3188	27 15 2.9	4.140
9	2 52 2.75	2.0537	21 44 2.8	9.553	9	4 37 13.84	2.3238	27 19 7.1	4.000
10	2 54 6.14	2.0593	21 53 33.2	9.462	10	4 39 33.42	2.3288	27 23 2.9	3.860
11	2 56 9.87	2.0650	22 2 58.2	9.371	11	4 41 53.30	2.3337	27 26 50.3	3.718
12	2 58 13.94	2.0707	22 12 17.7	9.278	12	4 44 13.47	2.3385	27 30 29.1	3.575
13	3 0 18.35	2.0765	22 21 31.6	9.184	13	4 46 33.92	2.3432	27 33 59.3	3.432
14	3 2 23.10	2.0821	22 30 39.8	9.089	14	4 48 54.65	2.3479	27 37 20.9	3.287
15	3 4 28.20	2.0878	22 39 42.3	8.993	15	4 51 15.67	2.3526	27 40 33.8	3.142
16	3 6 33.64	2.0936	22 48 39.0	8.896	16	4 53 36.96	2.3571	27 43 37.9	2.995
17	3 8 39.43	2.0994	22 57 29.8	8.798	17	4 55 58.52	2.3615	27 46 33.2	2.847
18	3 10 45.57	2.1052	23 6 14.8	8.700	18	4 58 20.34	2.3658	27 49 19.6	2.699
19	3 12 52.05	2.1109	23 14 53.8	8.599	19	5 0 42.42	2.3702	27 51 57.1	2.551
20	3 14 58.88	2.1167	23 23 26.7	8.497	20	5 3 4.76	2.3744	27 54 25.7	2.401
21	3 17 6.06	2.1226	23 31 53.5	8.395	21	5 5 27.35	2.3786	27 56 45.2	2.250
22	3 19 13.59	2.1284	23 40 14.1	8.292	22	5 7 50.19	2.3827	27 58 55.7	2.099
23	3 21 21.47	2.1342	23 48 28.5	8.187	23	5 10 13.27	2.3866	28 0 57.1	1.947
24	3 23 29.69	2.1400	N. 23 56 36.6	8.082	24	5 12 36.58	2.3904	N. 28 2 49.3	1.793

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	5 12 36.58	2.3904	N.28 2 49.3	1.793	1	7 9 59.28	2.4607	N.26 22 31.3	6.076
2	5 15 0.12	2.3943	28 4 32.3	1.639	2	7 12 26.89	2.4596	26 16 21.8	6.242
3	5 17 23.90	2.3981	28 6 6.0	1.485	3	7 14 54.43	2.4585	26 10 2.3	6.407
4	5 19 47.90	2.4017	28 7 30.5	1.330	4	7 17 21.91	2.4574	26 3 32.9	6.572
5	5 22 12.11	2.4052	28 8 45.6	1.174	5	7 19 49.32	2.4561	25 56 53.6	6.737
6	5 24 36.53	2.4087	28 9 51.4	1.018	6	7 22 16.64	2.4547	25 50 4.4	6.902
7	5 27 1.15	2.4120	28 10 47.8	0.861	7	7 24 43.88	2.4532	25 43 5.4	7.065
8	5 29 25.97	2.4153	28 11 34.7	0.703	8	7 27 11.03	2.4517	25 35 56.6	7.228
9	5 31 50.98	2.4185	28 12 12.1	0.544	9	7 29 38.09	2.4502	25 28 38.0	7.391
10	5 34 16.19	2.4217	28 12 40.0	0.385	10	7 32 5.05	2.4485	25 21 9.6	7.554
11	5 36 41.58	2.4246	28 12 58.3	0.225	11	7 34 31.91	2.4467	25 13 31.5	7.716
12	5 39 7.14	2.4274	28 13 7.0	+ 0.065	12	7 36 58.66	2.4449	25 5 43.7	7.877
13	5 41 32.87	2.4302	28 13 6.1	- 0.096	13	7 39 25.30	2.4431	24 57 46.2	8.038
14	5 43 58.77	2.4329	28 12 55.5	0.237	14	7 41 51.83	2.4411	24 49 39.1	8.198
15	5 46 24.82	2.4354	28 12 35.2	0.419	15	7 44 18.23	2.4390	24 41 22.4	8.358
16	5 48 51.02	2.4378	28 12 5.2	0.582	16	7 46 44.51	2.4369	24 32 56.1	8.517
17	5 51 17.36	2.4402	28 11 25.4	0.745	17	7 49 10.66	2.4348	24 24 20.3	8.676
18	5 53 43.85	2.4426	28 10 35.8	0.908	18	7 51 36.68	2.4326	24 15 35.0	8.833
19	5 56 10.47	2.4447	28 9 36.4	1.072	19	7 54 2.57	2.4303	24 6 40.3	8.990
20	5 58 37.21	2.4467	28 8 27.1	1.237	20	7 56 28.32	2.4279	23 57 36.2	9.146
21	6 0 4.08	2.4487	28 7 8.0	1.401	21	7 58 53.92	2.4255	23 48 22.8	9.302
22	6 2 31.06	2.4505	28 5 39.0	1.566	22	8 1 19.38	2.4232	23 39 0.0	9.457
23	6 5 58.14	2.4522	28 4 0.1	1.732	23	8 3 44.70	2.4207	23 29 28.0	9.610
	6 8 25.33	2.4539	N.28 2 11.2	1.897	24	8 6 9.86	2.4181	N.23 19 46.8	9.763
SUNDAY 22.					TUESDAY 24.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	6 10 52.61	2.4554	N.28 0 12.4	2.063	1	8 8 34.87	2.4156	N.23 9 56.4	9.916
2	6 13 19.98	2.4568	27 58 3.6	2.230	2	8 10 59.73	2.4129	22 59 56.9	10.067
3	6 15 47.43	2.4582	27 55 44.8	2.396	3	8 13 24.42	2.4102	22 49 48.3	10.217
4	6 18 14.96	2.4594	27 53 16.1	2.563	4	8 15 48.95	2.4075	22 39 30.8	10.367
5	6 20 42.56	2.4605	27 50 37.3	2.730	5	8 18 13.32	2.4047	22 29 4.3	10.516
6	6 23 10.22	2.4614	27 47 48.5	2.897	6	8 20 37.52	2.4020	22 18 28.9	10.663
7	6 25 37.93	2.4623	27 44 49.6	3.065	7	8 23 1.56	2.3992	22 7 44.7	10.810
8	6 28 5.70	2.4632	27 41 40.7	3.232	8	8 25 25.43	2.3964	21 56 51.7	10.956
9	6 30 33.51	2.4638	27 38 21.8	3.399	9	8 27 49.13	2.3935	21 45 50.0	11.101
10	6 33 1.35	2.4643	27 34 52.8	3.567	10	8 30 12.65	2.3906	21 34 39.6	11.245
11	6 35 29.22	2.4648	27 31 13.7	3.735	11	8 32 36.00	2.3877	21 23 20.6	11.387
12	6 37 57.12	2.4652	27 27 24.6	3.903	12	8 34 59.17	2.3847	21 11 53.1	11.528
13	6 40 25.04	2.4654	27 23 25.4	4.071	13	8 37 22.17	2.3818	21 0 17.2	11.669
14	6 42 52.97	2.4656	27 19 16.1	4.238	14	8 39 44.99	2.3788	20 48 32.8	11.809
15	6 45 20.91	2.4656	27 14 56.8	4.406	15	8 42 7.63	2.3758	20 36 40.1	11.947
16	6 47 48.84	2.4655	27 10 27.4	4.574	16	8 44 30.09	2.3728	20 24 39.2	12.084
17	6 50 16.77	2.4654	27 5 47.9	4.742	17	8 46 52.37	2.3698	20 12 30.1	12.220
18	6 52 44.69	2.4652	27 0 58.4	4.909	18	8 49 14.47	2.3668	20 0 12.8	12.355
19	6 55 12.59	2.4648	26 55 58.9	5.076	19	8 51 36.39	2.3638	19 47 47.5	12.488
20	6 57 40.46	2.4643	26 50 49.3	5.243	20	8 53 58.13	2.3607	19 35 14.2	12.621
21	7 0 8.31	2.4638	26 45 29.7	5.410	21	8 56 19.68	2.3577	19 22 33.0	12.752
22	7 2 36.12	2.4632	26 40 0.1	5.577	22	8 58 41.05	2.3547	19 9 43.9	12.882
23	7 5 3.89	2.4624	26 34 20.5	5.743	23	9 1 2.24	2.3517	18 56 47.1	13.011
24	7 7 31.61	2.4616	26 28 30.9	5.910	24	9 3 23.25	2.3487	18 43 42.6	13.138
	7 9 59.28	2.4607	N.26 22 31.3	6.076		9 5 44.08	2.3456	N.18 30 30.5	13.264

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 25.					FRIDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	9 5 44.08	2.3456	N. 18 30 30.5	13.264	0	10 55 24.29	2.2422	N. 5 56 50.4	17.900
1	9 8 4.72	2.3426	18 17 10.9	13.389	1	10 57 38.80	2.2415	5 39 19.0	17.545
2	9 10 25.19	2.3397	18 3 43.8	13.513	2	10 59 53.27	2.2408	5 21 45.0	17.588
3	9 12 45.48	2.3367	17 50 9.3	13.635	3	11 2 7.69	2.2401	5 4 8.4	17.630
4	9 15 5.59	2.3337	17 36 27.6	13.755	4	11 4 22.08	2.2396	4 46 29.4	17.669
5	9 17 25.52	2.3307	17 22 38.7	13.875	5	11 6 36.44	2.2392	4 28 48.1	17.706
6	9 19 45.28	2.3278	17 8 42.6	13.993	6	11 8 50.78	2.2388	4 11 4.7	17.741
7	9 22 4.86	2.3249	16 54 39.5	14.109	7	11 11 5.10	2.2385	3 53 19.2	17.774
8	9 24 24.27	2.3220	16 40 29.5	14.224	8	11 13 19.40	2.2382	3 35 31.8	17.806
9	9 26 43.50	2.3191	16 26 12.6	14.338	9	11 15 33.69	2.2381	3 17 42.5	17.836
10	9 29 2.56	2.3165	16 11 48.9	14.451	10	11 17 47.97	2.2380	2 59 51.5	17.863
11	9 31 21.45	2.3135	15 57 18.5	14.562	11	11 20 2.25	2.2380	2 41 59.0	17.888
12	9 33 40.18	2.3107	15 42 41.5	14.671	12	11 22 16.53	2.2381	2 24 5.0	17.911
13	9 35 58.74	2.3079	15 27 58.0	14.778	13	11 24 30.82	2.2382	2 6 9.7	17.932
14	9 38 17.13	2.3052	15 13 8.1	14.885	14	11 26 45.12	2.2385	1 48 13.2	17.951
15	9 40 35.36	2.3025	14 58 11.8	14.990	15	11 28 59.44	2.2388	1 30 15.6	17.968
16	9 42 53.43	2.2999	14 43 9.3	15.093	16	11 31 13.78	2.2392	1 12 17.0	17.983
17	9 45 11.35	2.2973	14 28 0.7	15.194	17	11 33 28.14	2.2396	0 54 17.6	17.996
18	9 47 29.11	2.2947	14 12 46.0	15.294	18	11 35 42.53	2.2402	0 36 17.5	18.007
19	9 49 46.71	2.2922	13 57 25.4	15.392	19	11 37 56.96	2.2408	0 18 16.8	18.016
20	9 52 4.17	2.2897	13 41 58.9	15.490	20	11 40 11.43	2.2415	N. 0 0 15.6	18.022
21	9 54 21.48	2.2872	13 26 26.6	15.586	21	11 42 25.94	2.2423	S. 0 17 45.9	18.027
22	9 56 38.64	2.2848	13 10 48.6	15.679	22	11 44 40.50	2.2432	0 35 47.6	18.029
23	9 58 55.66	2.2825	N. 12 55 5.1	15.771	23	11 46 55.12	2.2441	S. 0 53 49.4	18.030
THURSDAY 26.					SATURDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	10 1 12.54	2.2802	N. 12 39 16.1	15.862	0	11 49 9.79	2.2451	S. 1 11 51.2	18.028
1	10 3 29.28	2.2779	12 23 21.7	15.950	1	11 51 24.53	2.2462	1 29 52.8	18.024
2	10 5 45.89	2.2757	12 7 22.1	16.037	2	11 53 39.33	2.2473	1 47 54.1	18.018
3	10 8 2.36	2.2735	11 51 17.3	16.122	3	11 55 54.20	2.2485	2 5 55.0	18.010
4	10 10 18.71	2.2715	11 35 7.5	16.205	4	11 58 9.15	2.2499	2 23 55.3	18.000
5	10 12 34.94	2.2694	11 18 52.7	16.287	5	12 0 24.19	2.2513	2 41 55.0	17.988
6	10 14 51.04	2.2674	11 2 33.0	16.367	6	12 2 39.31	2.2527	2 59 53.9	17.974
7	10 17 7.03	2.2655	10 46 8.6	16.446	7	12 4 54.52	2.2543	3 17 51.9	17.957
8	10 19 22.90	2.2636	10 29 39.5	16.522	8	12 7 9.83	2.2560	3 35 48.8	17.938
9	10 21 38.66	2.2617	10 13 5.9	16.597	9	12 9 25.24	2.2577	3 53 44.5	17.917
10	10 23 54.31	2.2600	9 56 27.9	16.670	10	12 11 40.75	2.2594	4 11 38.9	17.895
11	10 26 9.86	2.2583	9 39 45.5	16.742	11	12 13 56.37	2.2613	4 29 31.9	17.871
12	10 28 25.31	2.2567	9 22 58.9	16.811	12	12 16 12.11	2.2633	4 47 23.4	17.843
13	10 30 40.66	2.2551	9 6 8.2	16.878	13	12 18 27.97	2.2653	5 5 13.1	17.813
14	10 32 55.92	2.2536	8 49 13.5	16.945	14	12 20 43.95	2.2673	5 23 1.0	17.782
15	10 35 11.09	2.2521	8 32 14.8	17.009	15	12 23 0.05	2.2694	5 40 47.0	17.749
16	10 37 26.17	2.2508	8 15 12.4	17.071	16	12 25 16.28	2.2717	5 58 30.9	17.713
17	10 39 41.18	2.2495	7 58 6.3	17.131	17	12 27 32.65	2.2740	6 16 12.6	17.676
18	10 41 56.11	2.2482	7 40 56.7	17.189	18	12 29 49.16	2.2764	6 33 52.0	17.636
19	10 44 10.96	2.2470	7 23 43.6	17.246	19	12 32 5.82	2.2788	6 51 28.9	17.593
20	10 46 25.75	2.2459	7 6 27.2	17.301	20	12 34 22.62	2.2812	7 9 3.2	17.549
21	10 48 40.47	2.2448	6 49 7.5	17.354	21	12 36 39.57	2.2838	7 26 34.8	17.502
22	10 50 55.13	2.2439	6 31 44.7	17.404	22	12 38 56.68	2.2865	7 44 3.5	17.454
23	10 53 9.74	2.2430	6 14 19.0	17.453	23	12 41 13.95	2.2893	8 1 29.3	17.404
24	10 55 24.29	2.2422	N. 5 56 50.4	17.500	24	12 43 31.39	2.2921	S. 8 18 52.0	17.351

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 29.					TUESDAY 31.				
0	12 43 31.39	2.2921	S. 8 18 52.0	17.351	0	14 37 39.74	2.4740	S. 20 31 54.2	12.453
1	12 45 49.00	2.2949	8 36 11.4	17.296	1	14 40 8.30	2.4779	20 44 17.0	12.307
2	12 48 6.78	2.2977	8 53 27.5	17.239	2	14 42 37.09	2.4818	20 56 31.0	12.158
3	12 50 24.73	2.3007	9 10 40.1	17.180	3	14 45 6.12	2.4858	21 8 36.0	12.008
4	12 52 42.86	2.3037	9 27 49.1	17.118	4	14 47 35.38	2.4897	21 20 32.0	11.858
5	12 55 1.18	2.3068	9 44 54.3	17.055	5	14 50 4.88	2.4936	21 32 19.0	11.707
6	12 57 19.68	2.3099	10 1 55.7	16.990	6	14 52 34.61	2.4973	21 43 56.8	11.553
7	12 59 38.37	2.3132	10 18 53.1	16.922	7	14 55 4.56	2.5010	21 55 25.4	11.398
8	13 1 57.26	2.3165	10 35 46.4	16.852	8	14 57 34.73	2.5048	22 6 44.6	11.242
9	13 4 16.35	2.3198	10 52 35.4	16.781	9	15 0 5.13	2.5085	22 17 54.4	11.086
10	13 6 35.64	2.3232	11 9 20.1	16.707	10	15 2 35.75	2.5120	22 28 54.7	10.926
11	13 8 55.13	2.3266	11 26 0.2	16.630	11	15 5 6.57	2.5154	22 39 45.5	10.766
12	13 11 14.83	2.3301	11 42 35.7	16.552	12	15 7 37.60	2.5189	22 50 26.6	10.604
13	13 13 34.74	2.3336	11 59 6.5	16.472	13	15 10 8.84	2.5223	23 0 58.0	10.442
14	13 15 54.86	2.3372	12 15 32.4	16.390	14	15 12 40.28	2.5257	23 11 19.6	10.278
15	13 18 15.20	2.3408	12 31 53.3	16.306	15	15 15 11.92	2.5289	23 21 31.4	10.114
16	13 20 35.76	2.3445	12 48 9.1	16.220	16	15 17 43.75	2.5321	23 31 33.3	9.947
17	13 22 56.54	2.3482	13 4 19.7	16.132	17	15 20 15.77	2.5352	23 41 25.1	9.780
18	13 25 17.54	2.3519	13 20 24.9	16.042	18	15 22 47.98	2.5383	23 51 6.9	9.612
19	13 27 38.77	2.3557	13 36 24.7	15.949	19	15 25 20.37	2.5412	24 0 38.6	9.443
20	13 30 0.23	2.3596	13 52 18.8	15.854	20	15 27 52.93	2.5441	24 10 0.1	9.273
21	13 32 21.92	2.3635	14 8 7.2	15.758	21	15 30 25.66	2.5469	24 19 11.4	9.102
22	13 34 43.85	2.3674	14 23 49.8	15.660	22	15 32 58.56	2.5496	24 28 12.4	8.930
23	13 37 6.01	2.3713	S. 14 39 26.4	15.559	23	15 35 31.61	2.5522	S. 24 37 3.0	8.757
MONDAY 30.					WEDNESDAY, APRIL 1.				
0	13 39 28.40	2.3752	S. 14 54 56.9	15.457	0	15 38 4.81	2.5546	S. 24 45 43.2	8.583
1	13 41 51.03	2.3792	15 10 21.2	15.353	PHASES OF THE MOON.				
2	13 44 13.91	2.3833	15 25 39.2	15.247					
3	13 46 37.03	2.3873	15 40 50.8	15.138					
4	13 49 0.39	2.3914	15 55 55.8	15.028	☾ Last Quarter . . . March 5 23 28.9				
5	13 51 24.00	2.3955	16 10 54.2	14.917					
6	13 53 47.85	2.3996	16 25 45.9	14.804					
7	13 56 11.95	2.4037	16 40 30.7	14.688	● New Moon 13 22 47.9				
8	13 58 36.29	2.4079	16 55 8.5	14.570					
9	14 1 0.89	2.4121	17 9 39.1	14.450					
10	14 3 25.74	2.4162	17 24 2.5	14.329	☾ First Quarter 21 23 56.7				
11	14 5 50.83	2.4203	17 38 18.6	14.207					
12	14 8 16.17	2.4244	17 52 27.3	14.082					
13	14 10 41.76	2.4287	18 6 28.4	13.955	○ Full Moon 28 17 21.5				
14	14 13 7.61	2.4329	18 20 21.9	13.827					
15	14 15 33.71	2.4371	18 34 7.7	13.697					
16	14 18 0.06	2.4412	18 47 45.6	13.566	☾ Apogee March 14 13.4				
17	14 20 26.66	2.4453	19 1 15.6	13.432					
18	14 22 53.50	2.4494	19 14 37.5	13.297					
19	14 25 20.59	2.4536	19 27 51.2	13.160	☾ Perigee 28 11.4				
20	14 27 47.93	2.4577	19 40 56.7	13.022					
21	14 30 15.52	2.4618	19 53 53.9	12.882					
22	14 32 43.35	2.4658	20 6 42.6	12.740					
23	14 35 11.42	2.4699	20 19 22.7	12.597					
24	14 37 39.74	2.4740	S. 20 31 54.2	12.453					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	Pollux W.	73 49 22	2010	75 42 41	2017	77 35 49	2025	79 28 45	2033
	JUPITER W.	65 14 33	1986	67 8 30	1993	69 2 15	2001	70 55 48	2009
	Regulus W.	36 52 33	2003	38 46 3	2010	40 39 21	2018	42 32 27	2026
	Antares E.	63 3 14	2003	61 9 45	2010	59 16 27	2018	57 23 21	2027
2	Pollux W.	88 49 45	2085	90 41 7	2097	92 32 11	2110	94 22 55	2123
	JUPITER W.	80 19 53	2062	82 11 51	2073	84 3 31	2086	85 54 52	2099
	Regulus W.	51 54 18	2079	53 45 50	2090	55 37 4	2103	57 27 58	2116
	Antares E.	48 1 34	2079	46 10 3	2092	44 18 51	2104	42 27 58	2117
	MARS E.	99 2 9	2306	97 16 18	2319	95 30 46	2332	93 45 33	2346
	α Aquilæ E.	100 43 41	2226	99 9 47	2231	97 35 59	2237	96 2 19	2245
3	JUPITER W.	95 6 19	2171	96 55 30	2186	98 44 18	2202	100 32 42	2218
	Regulus W.	66 37 17	2188	68 26 3	2204	70 14 25	2219	72 2 24	2235
	MARS E.	85 4 38	2421	83 21 33	2437	81 38 51	2454	79 56 33	2470
	α Aquilæ E.	88 17 18	2911	86 45 13	2928	85 13 30	2948	83 42 12	2969
	VENUS E.	95 54 21	2569	94 14 44	2586	92 35 30	2603	90 56 39	2621
4	Regulus W.	80 56 22	2317	82 41 56	2334	84 27 6	2351	86 11 51	2368
	Spica W.	26 58 27	2328	28 43 45	2344	30 28 40	2360	32 13 12	2377
	MARS E.	71 30 59	2557	69 51 5	2575	68 11 36	2593	66 32 32	2611
	α Aquilæ E.	76 12 51	2996	74 44 37	3126	73 16 59	3158	71 49 59	3192
	VENUS E.	82 48 23	2710	81 11 57	2729	79 35 55	2747	78 0 17	2766
5	Regulus W.	94 49 31	2453	96 31 50	2470	98 13 46	2487	99 55 18	2503
	Spica W.	40 50 0	2458	42 32 12	2475	44 14 0	2492	45 55 25	2508
	MARS E.	58 23 17	2701	56 46 39	2719	55 10 24	2737	53 34 33	2755
	α Aquilæ E.	64 45 37	3386	63 23 4	3431	62 1 23	3480	60 40 36	3529
	VENUS E.	70 8 15	2859	68 35 3	2877	67 2 15	2895	65 29 50	2913
	SUN E.	102 11 55	2783	100 37 5	2801	99 2 38	2819	97 28 35	2838
6	Spica W.	54 16 52	2588	55 56 4	2604	57 34 54	2618	59 13 24	2634
	MARS E.	45 41 4	2841	44 7 29	2858	42 34 16	2874	41 1 24	2891
	α Aquilæ E.	54 11 28	3229	52 56 56	3202	51 43 38	3218	50 31 37	3235
	VENUS E.	57 53 28	3002	56 23 18	3019	54 53 29	3037	53 24 2	3053
	SUN E.	89 44 5	2925	88 12 18	2942	86 40 52	2958	85 9 47	2975
7	Spica W.	67 20 52	2706	68 57 24	2719	70 33 38	2732	72 9 35	2746
	SATURN W.	41 23 59	2782	42 58 50	2791	44 33 30	2800	46 7 58	2808
	VENUS E.	46 1 47	3133	44 34 17	3148	43 7 6	3163	41 40 13	3178
	SUN E.	77 39 26	3053	76 10 19	3069	74 41 31	3082	73 13 0	3097
8	Spica W.	80 5 6	2807	81 39 25	2818	83 13 29	2829	84 47 19	2840
	SATURN W.	53 57 20	2855	55 30 36	2864	57 3 41	2873	58 36 34	2882
	Antares W.	34 11 15	2805	35 45 36	2817	37 19 42	2828	38 53 34	2838
	VENUS E.	34 29 58	3246	33 4 43	3258	31 39 42	3270	30 14 56	3282
	SUN E.	65 54 41	3164	64 27 49	3176	63 1 11	3188	61 34 48	3201
9	Spica W.	92 33 7	2890	94 5 39	2898	95 38 0	2908	97 10 9	2916
	SATURN W.	66 18 11	2925	67 49 58	2933	69 21 35	2941	70 53 2	2948
	Antares W.	46 39 33	2888	48 12 7	2897	49 44 30	2905	51 16 42	2914
	SUN E.	54 26 18	3255	53 1 14	3265	51 36 21	3274	50 11 39	3284

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	Pollux	W.	81 21 27	2042	83 13 55	2052	85 6 8	2062	86 58 5	2073
	JUPITER	W.	72 49 8	2039	74 42 13	2028	76 35 3	2039	78 27 37	2050
	Regulus	W.	44 25 20	2036	46 17 58	2046	48 10 21	2056	50 2 28	2067
	Antares	E.	55 30 29	2036	53 37 51	2046	51 45 29	2057	49 53 23	2068
2	Pollux	W.	96 13 19	2136	98 3 23	2151	99 53 5	2165	101 42 25	2180
	JUPITER	W.	87 45 52	2113	89 36 31	2127	91 26 49	2141	93 16 45	2156
	Regulus	W.	59 18 32	2130	61 8 46	2144	62 58 38	2158	64 48 9	2173
	Antares	E.	40 37 25	2131	38 47 13	2145	36 57 22	2159	35 7 53	2174
	MARS	E.	92 0 40	2360	90 16 8	2374	88 31 56	2389	86 48 6	2405
	♌ Aquilæ	E.	94 28 49	2355	92 55 32	2366	91 22 30	2380	89 49 45	2394
3	JUPITER	W.	102 20 43	2235	104 8 19	2251	105 55 31	2268	107 42 18	2284
	Regulus	W.	73 50 0	2251	75 37 12	2267	77 24 0	2284	79 10 23	2300
	MARS	E.	78 14 38	2487	76 33 7	2504	74 52 0	2522	73 11 17	2540
	♌ Aquilæ	E.	82 11 20	2492	80 40 57	2505	79 11 3	2540	77 41 40	2568
	VENUS	E.	89 18 12	2638	87 40 9	2655	86 2 29	2674	84 25 14	2692
4	Regulus	W.	87 56 12	2385	89 40 8	2402	91 23 40	2419	93 6 48	2436
	Spica	W.	33 57 20	2393	35 41 5	2409	37 24 27	2426	39 7 25	2442
	MARS	E.	64 53 52	2629	63 15 37	2647	61 37 46	2665	60 0 19	2682
	♌ Aquilæ	E.	70 23 40	2226	68 58 2	2264	67 33 8	2302	66 8 59	2343
	VENUS	E.	76 25 4	2784	74 50 15	2805	73 15 51	2821	71 41 51	2840
5	Regulus	W.	101 36 27	2320	103 17 13	2336	104 57 36	2352	106 37 37	2369
	Spica	W.	47 36 27	2324	49 17 7	2340	50 57 24	2356	52 37 19	2372
	MARS	E.	51 59 6	2772	50 24 2	2789	48 49 20	2807	47 15 1	2824
	♌ Aquilæ	E.	59 20 44	2582	58 1 50	2639	56 43 58	2699	55 27 10	2762
	VENUS	E.	63 57 48	2931	62 26 9	2950	60 54 53	2967	59 23 59	2985
	SUN	E.	95 54 56	2855	94 21 40	2873	92 48 46	2890	91 16 14	2908
6	Spica	W.	60 51 33	2649	62 29 22	2663	64 6 51	2678	65 44 1	2692
	MARS	E.	39 28 54	2907	37 56 44	2923	36 24 54	2939	34 53 24	2954
	♌ Aquilæ	E.	49 20 56	2149	48 11 41	2143	47 3 55	2145	45 57 44	2156
	VENUS	E.	51 54 55	3070	50 26 9	3086	48 57 42	3102	47 29 35	3118
	SUN	E.	83 39 3	2892	82 8 39	2907	80 38 35	2923	79 8 51	2939
7	Spica	W.	73 45 14	2739	75 20 36	2771	76 55 42	2783	78 30 32	2795
	SATURN	W.	47 42 15	2818	49 16 20	2828	50 50 12	2837	52 23 52	2846
	VENUS	E.	40 13 37	3192	38 47 18	3205	37 21 15	3220	35 55 29	3232
	SUN	E.	71 44 47	3111	70 16 51	3125	68 49 12	3138	67 21 49	3151
8	Spica	W.	86 20 55	2851	87 54 17	2861	89 27 26	2870	91 0 23	2880
	SATURN	W.	60 9 16	2891	61 41 46	2900	63 14 5	2909	64 46 13	2916
	Antares	W.	40 27 12	2848	42 0 37	2859	43 33 48	2869	45 6 47	2879
	VENUS	E.	28 50 24	3294	27 26 5	3306	26 2 0	3317	24 38 8	3327
	SUN	E.	60 8 40	3212	58 42 45	3223	57 17 3	3234	55 51 34	3245
9	Spica	W.	98 42 8	2924	100 13 56	2932	101 45 34	2940	103 17 2	2947
	SATURN	W.	72 24 20	2956	73 55 28	2963	75 26 27	2970	76 57 17	2977
	Antares	W.	52 48 43	2922	54 20 34	2931	55 52 14	2938	57 23 45	2946
	SUN	E.	48 47 9	3293	47 22 49	3302	45 58 40	3310	44 34 40	3319

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
10	Spica W.	104 48 21	2954	106 19 31	2962	107 50 32	2968	109 21 25	2973
	SATURN W.	78 27 59	2983	79 58 33	2990	81 28 58	2997	82 59 15	3002
	Antares W.	58 55 6	2952	60 26 19	2959	61 57 23	2965	63 28 19	2972
	SUN E.	43 10 50	3326	41 47 9	3335	40 23 38	3342	39 0 15	3350
11	SATURN W.	90 28 54	3030	91 58 30	3035	93 27 59	3040	94 57 22	3044
	Antares W.	71 1 2	3001	72 31 14	3006	74 1 19	3010	75 31 19	3015
	SUN E.	32 5 23	3383	30 42 47	3389	29 20 18	3395	27 57 56	3400
12	SATURN W.	102 22 56	3066	103 51 47	3069	105 20 34	3073	106 49 16	3078
	Antares W.	82 59 57	3035	84 29 26	3039	85 58 51	3043	87 28 11	3045
	SUN E.	21 7 46	3431	19 46 4	3438	18 24 30	3445	17 3 4	3452
15	SUN W.	11 42 5	3502	13 2 27	3494	14 22 58	3487	15 43 37	3480
	Aldebaran E.	62 3 16	3173	60 36 34	3174	59 9 54	3177	57 43 17	3179
	Pollux E.	104 32 37	3079	103 4 2	3079	101 35 27	3078	100 6 51	3077
16	SUN W.	22 28 25	3458	23 49 36	3454	25 10 52	3450	26 32 12	3446
	Aldebaran E.	50 31 3	3195	49 4 48	3199	47 38 38	3204	46 12 33	3209
	Pollux E.	92 43 27	3070	91 14 41	3068	89 45 52	3065	88 17 0	3063
	JUPITER E.	100 31 55	3056	99 2 52	3055	97 33 47	3052	96 4 39	3051
17	SUN W.	33 19 57	3423	34 41 45	3421	36 3 38	3415	37 25 37	3411
	Aldebaran E.	39 3 51	3244	37 38 34	3254	36 13 29	3266	34 48 38	3280
	Pollux E.	80 51 50	3047	79 22 36	3043	77 53 17	3039	76 23 53	3035
	JUPITER E.	88 38 13	3035	87 8 44	3031	85 39 10	3027	84 9 31	3023
18	SUN W.	44 17 4	3380	45 39 43	3374	47 2 29	3366	48 25 24	3359
	Pollux E.	68 55 28	3009	67 25 27	3004	65 55 19	2997	64 25 3	2991
	JUPITER E.	76 39 51	2998	75 9 36	2992	73 39 13	2985	72 8 42	2980
	Regulus E.	105 48 42	3002	104 18 32	2996	102 48 14	2989	101 17 48	2982
19	SUN W.	55 22 14	3317	56 46 6	3306	58 10 10	3297	59 34 25	3287
	Pollux E.	56 51 33	2954	55 20 22	2946	53 49 1	2937	52 17 29	2928
	JUPITER E.	64 34 0	2942	63 2 34	2934	61 30 58	2925	59 59 11	2916
	Regulus E.	93 43 22	2944	92 11 59	2935	90 40 25	2926	89 8 39	2917
20	SUN W.	66 38 48	3230	68 4 22	3218	69 30 10	3204	70 56 14	3192
	α Arietis W.	30 48 53	2954	32 20 29	2916	33 52 27	2901	35 24 45	2883
	Pollux E.	44 36 53	2880	43 4 8	2869	41 31 9	2858	39 57 56	2847
	JUPITER E.	52 17 12	2866	50 44 9	2855	49 10 52	2843	47 37 20	2831
	Regulus E.	81 26 45	2865	79 53 41	2854	78 20 23	2842	76 46 50	2830
21	SUN W.	78 10 35	3120	79 38 20	3105	81 6 23	3090	82 34 45	3073
	α Arietis W.	43 11 32	2803	44 45 56	2787	46 20 41	2771	47 55 47	2754
	JUPITER E.	39 45 46	2769	38 10 37	2756	36 35 11	2742	34 59 27	2729
	Regulus E.	68 54 59	2764	67 19 44	2750	65 44 11	2736	64 8 19	2721
22	SUN W.	90 1 38	2989	91 32 4	2972	93 2 52	2954	94 34 3	2936
	α Arietis W.	55 56 49	2670	57 34 9	2652	59 11 53	2635	60 50 0	2617
	Regulus E.	56 3 55	2643	54 25 59	2626	52 47 40	2610	51 8 59	2593
	Spica E.	110 5 12	2646	108 27 20	2629	106 49 5	2613	105 10 28	2596

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Spica W.	110 52 9	2981	112 22 46	2987	113 53 15	2993	115 23 37	2998
	SATURN W.	84 29 25	3008	85 59 28	3014	87 29 23	3019	88 59 12	3025
	Antares W.	64 59 6	2978	66 29 46	2985	68 0 18	2990	69 30 43	2995
	SUN E.	37 37 1	3357	36 13 55	3364	34 50 57	3370	33 28 6	3377
11	SATURN W.	96 26 40	3049	97 55 52	3053	99 24 59	3058	100 54 0	3064
	Antares W.	77 1 13	3019	78 31 2	3024	80 0 45	3028	81 30 23	3031
	SUN E.	26 35 40	3408	25 13 32	3413	23 51 30	3419	22 29 35	3424
12	SATURN W.	108 17 53	3081	109 46 26	3084	111 14 55	3087	112 43 20	3091
	Antares W.	88 57 28	3048	90 26 41	3051	91 55 51	3054	93 24 57	3056
	SUN E.	15 41 46	3461	14 20 38	3471	12 59 42	3483	11 38 59	3497
15	SUN W.	17 4 24	3474	18 25 17	3479	19 46 15	3485	21 7 18	3488
	Aldebaran E.	56 16 43	3183	54 50 13	3185	53 23 46	3188	51 57 22	3194
	Pollux E.	98 38 13	3076	97 9 34	3074	95 40 53	3073	94 12 11	3078
16	SUN W.	27 53 36	3443	29 15 4	3438	30 36 37	3434	31 58 15	3431
	Aldebaran E.	44 46 34	3214	43 20 41	3220	41 54 56	3227	40 29 19	3235
	Pollux E.	86 48 5	3060	85 19 7	3057	83 50 5	3055	82 21 0	3051
	JUPITER E.	94 35 29	3047	93 6 15	3045	91 36 58	3042	90 7 37	3039
17	SUN W.	38 47 41	3405	40 9 52	3400	41 32 9	3395	42 54 33	3387
	Aldebaran E.	33 24 3	3206	31 59 47	3215	30 35 53	3227	29 12 24	3235
	Pollux E.	74 54 24	3051	73 24 50	3026	71 55 9	3021	70 25 22	3015
	JUPITER E.	82 39 47	3018	81 9 57	3014	79 40 1	3009	78 9 59	3004
18	SUN W.	49 48 27	3351	51 11 39	3343	52 35 1	3335	53 58 32	3325
	Pollux E.	62 54 39	2984	61 24 6	2977	59 53 25	2969	58 22 34	2964
	JUPITER E.	70 38 4	2973	69 7 17	2965	67 36 21	2958	66 5 15	2950
	Regulus E.	99 47 13	2976	98 16 30	2968	96 45 37	2961	95 14 35	2952
19	SUN W.	60 58 52	3276	62 23 31	3265	63 48 23	3253	65 13 29	3242
	Pollux E.	50 45 46	2919	49 13 51	2909	47 41 44	2900	46 9 25	2890
	JUPITER E.	58 27 12	2906	56 55 1	2897	55 22 38	2887	53 50 2	2876
	Regulus E.	87 36 42	2907	86 4 32	2898	84 32 10	2887	82 59 34	2876
20	SUN W.	72 22 33	3178	73 49 8	3164	75 16 0	3150	76 43 9	3136
	♈ Arietis W.	36 57 25	2867	38 30 26	2852	40 3 47	2835	41 37 29	2819
	Pollux E.	38 24 29	2835	36 50 47	2825	35 16 51	2813	33 42 40	2801
	JUPITER E.	46 3 33	2819	44 29 30	2808	42 55 12	2795	41 20 37	2782
	Regulus E.	75 13 1	2818	73 38 56	2805	72 4 34	2792	70 29 55	2779
21	SUN W.	84 3 27	3057	85 32 29	3041	87 1 51	3024	88 31 34	3007
	♈ Arietis W.	49 31 15	2738	51 7 5	2721	52 43 17	2704	54 19 52	2687
	JUPITER E.	33 23 25	2714	31 47 4	2701	30 10 25	2686	28 33 26	2672
	Regulus E.	62 32 7	2706	60 55 35	2691	59 18 43	2675	57 41 30	2659
22	SUN W.	96 5 36	2927	97 37 33	2899	99 9 53	2880	100 42 37	2861
	♈ Arietis W.	62 28 32	2599	64 7 28	2582	65 46 48	2564	67 26 33	2546
	Regulus E.	49 29 55	2577	47 50 28	2559	46 10 37	2542	44 30 22	2524
	Spica E.	103 31 27	2579	101 52 3	2561	100 12 15	2544	98 32 3	2527

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	SUN W.	102 15 46	2848	103 49 19	2823	105 23 17	2805	106 57 39	2785
	α Arietis W.	69 6 42	2327	70 47 17	2310	72 28 17	2291	74 9 43	2273
	Aldebaran W.	38 25 53	2701	40 2 32	2671	41 39 51	2641	43 17 50	2612
	Regulus E.	42 49 42	2306	41 8 37	2289	39 27 8	2271	37 45 14	2253
	Spica E.	96 51 27	2309	95 10 26	2291	93 29 0	2273	91 47 9	2255
24	SUN W.	114 55 53	2688	116 32 49	2669	118 10 11	2650	119 47 58	2631
	α Arietis W.	82 43 21	2381	84 27 23	2363	86 11 51	2345	87 56 45	2326
	Aldebaran W.	51 37 4	2484	53 18 40	2461	55 0 48	2438	56 43 29	2416
	Spica E.	83 11 31	2364	81 27 5	2347	79 42 14	2328	77 56 56	2311
	SATURN E.	109 0 45	2391	107 16 57	2372	105 32 42	2353	103 48 0	2335
25	α Arietis W.	96 47 43	2241	98 35 10	2225	100 23 1	2208	102 11 17	2192
	Aldebaran W.	65 24 36	2312	67 10 18	2294	68 56 27	2275	70 43 3	2257
	Spica E.	69 4 0	2225	67 16 9	2208	65 27 53	2192	63 39 13	2175
	SATURN E.	94 57 53	2246	93 10 34	2229	91 22 50	2213	89 34 42	2197
26	Aldebaran W.	79 42 26	2176	81 31 29	2162	83 20 54	2149	85 10 39	2136
	Pollux W.	36 35 52	2116	38 26 26	2102	40 17 22	2088	42 8 40	2075
	JUPITER W.	28 51 19	2113	30 41 58	2099	32 32 59	2085	34 24 21	2072
	Spica E.	54 30 2	2105	52 39 7	2089	50 47 51	2076	48 56 15	2064
	SATURN E.	80 28 14	2124	78 37 52	2111	76 47 10	2099	74 56 9	2087
	Antares E.	100 22 30	2099	98 31 29	2086	96 40 8	2073	94 48 27	2060
27	Aldebaran W.	94 23 51	2084	96 15 15	2076	98 6 51	2069	99 58 38	2062
	Pollux W.	51 29 56	2019	53 23 1	2009	55 16 21	2001	57 9 54	1994
	JUPITER W.	43 45 58	2016	45 39 7	2008	47 32 29	2000	49 26 4	1993
	SATURN E.	65 36 58	2040	63 44 26	2033	61 51 44	2026	59 58 52	2023
	Antares E.	85 25 31	2008	83 32 9	1999	81 38 33	1992	79 44 46	1984
28	Pollux W.	66 40 8	1968	68 34 32	1966	70 29 0	1964	72 23 31	1963
	JUPITER W.	58 56 25	1968	60 50 50	1965	62 45 19	1964	64 39 50	1963
	Regulus W.	29 42 32	1960	31 37 9	1958	33 31 50	1956	35 26 33	1956
	SATURN E.	50 33 5	2012	48 39 49	2014	46 46 36	2016	44 53 27	2021
	Antares E.	70 13 25	1961	68 18 49	1958	66 24 9	1956	64 29 26	1956
29	Pollux W.	81 56 2	1971	83 50 22	1975	85 44 35	1980	87 38 41	1986
	JUPITER W.	74 12 20	1972	76 6 39	1976	78 0 51	1981	79 54 56	1987
	Regulus W.	45 0 0	1964	46 54 31	1968	48 48 55	1973	50 43 12	1979
	Antares E.	54 56 1	1965	53 1 31	1968	51 7 7	1974	49 12 51	1979
	α Aquilæ E.	106 29 31	2730	104 53 57	2739	103 18 9	2732	101 42 12	2727
30	Pollux W.	97 6 32	2026	98 59 26	2035	100 52 5	2046	102 44 27	2058
	JUPITER W.	89 22 39	2027	91 15 31	2037	93 8 8	2048	95 0 28	2059
	Regulus W.	60 11 59	2018	62 5 5	2028	63 57 55	2039	65 50 28	2051
	α Aquilæ E.	93 41 52	2738	92 6 2	2745	90 30 22	2756	88 54 56	2769
	MARS E.	111 49 2	2242	110 1 37	2252	108 14 27	2264	106 27 34	2275
31	Regulus W.	75 8 29	2116	76 59 3	2132	78 49 14	2147	80 39 2	2163
	α Aquilæ E.	81 2 38	2258	79 29 25	2282	77 56 43	2297	76 24 33	2313
	MARS E.	97 37 52	2345	95 52 58	2361	94 8 27	2377	92 24 19	2394
	Fomalhaut E.	105 44 30	2457	104 1 48	2447	102 19 20	2458	100 37 7	2470

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
23	SUN W.	108 32 27	2766	110 7 40	2746	111 43 19	2727	113 19 23	2707
	α Arietis W.	75 51 34	2455	77 33 51	2436	79 16 35	2417	80 59 45	2399
	Aldebaran W.	44 56 28	2385	46 35 43	2359	48 15 35	2333	49 56 2	2308
	Regulus E.	36 2 54	2434	34 20 8	2417	32 36 57	2398	30 53 20	2380
	Spica E.	90 4 53	2437	88 22 11	2419	86 39 4	2401	84 55 30	2383
24	SUN W.	121 26 11	2612	123 4 49	2593	124 43 53	2573	126 23 22	2557
	α Arietis W.	89 42 6	2399	91 27 52	2391	93 14 4	2274	95 0 41	2258
	Aldebaran W.	58 26 41	2394	60 10 25	2373	61 54 39	2352	63 39 23	2332
	Spica E.	76 11 13	2393	74 25 3	2276	72 38 28	2258	70 51 27	2241
	SATURN E.	102 2 51	2317	100 17 16	2298	98 31 14	2281	96 44 46	2264
25	α Arietis W.	103 59 56	2177	105 48 58	2162	107 38 23	2148	109 28 9	2134
	Aldebaran W.	72 30 6	2239	74 17 35	2223	76 5 28	2207	77 53 45	2191
	Spica E.	61 50 8	2160	60 0 40	2145	58 10 49	2130	56 20 36	2116
	SATURN E.	87 46 10	2181	85 57 14	2167	84 7 56	2152	82 18 16	2137
26	Aldebaran W.	87 0 43	2124	88 51 5	2113	90 41 45	2102	92 32 41	2093
	Pollux W.	44 0 18	2062	45 52 16	2050	47 44 32	2039	49 37 6	2028
	JUPITER W.	36 16 4	2039	38 8 6	2047	40 0 27	2036	41 53 5	2026
	Spica E.	47 4 21	2053	45 12 9	2042	43 19 40	2032	41 26 55	2023
	SATURN E.	73 4 50	2076	71 13 14	2066	69 21 23	2057	67 29 17	2048
	Antares E.	92 56 26	2048	91 4 7	2037	89 11 31	2027	87 18 39	2017
27	Aldebaran W.	101 50 35	2057	103 42 40	2053	105 34 51	2050	107 27 8	2048
	Pollux W.	59 3 38	1987	60 57 33	1981	62 51 37	1976	64 45 49	1972
	JUPITER W.	51 19 50	1986	53 13 46	1980	55 7 52	1975	57 2 5	1971
	SATURN E.	58 5 53	2018	56 12 47	2015	54 19 36	2012	52 26 21	2012
	Antares E.	77 50 47	1978	75 56 38	1973	74 2 21	1968	72 7 56	1964
28	Pollux W.	74 18 4	1963	76 12 37	1964	78 7 8	1965	80 1 37	1968
	JUPITER W.	66 34 23	1963	68 28 56	1964	70 23 27	1965	72 17 56	1968
	Regulus W.	37 21 17	1956	39 16 1	1956	41 10 44	1958	43 5 24	1961
	SATURN E.	43 0 25	2026	41 7 32	2034	39 14 51	2044	37 22 25	2055
	Antares E.	62 34 42	1956	60 39 58	1957	58 45 16	1959	56 50 36	1962
29	Pollux W.	89 32 38	1992	91 26 25	2000	93 20 0	2007	95 13 23	2016
	JUPITER W.	81 48 51	1993	83 42 36	2000	85 36 10	2009	87 29 31	2017
	Regulus W.	52 37 20	1985	54 31 18	1993	56 25 4	2000	58 18 38	2009
	Antares E.	47 18 44	1986	45 24 47	1993	43 31 1	2001	41 37 28	2010
	α Aquilæ E.	100 6 8	2725	98 30 1	2725	96 53 54	2727	95 17 50	2722
30	Pollux W.	104 36 31	2070	106 28 16	2083	108 19 42	2096	110 10 47	2111
	JUPITER W.	96 52 30	2072	98 44 13	2084	100 35 37	2098	102 26 40	2112
	Regulus W.	67 42 43	2062	69 34 40	2075	71 26 17	2088	73 17 34	2103
	α Aquilæ E.	87 19 47	2782	85 44 56	2798	84 10 26	2816	82 36 19	2836
	MARS E.	104 40 58	2288	102 54 41	2302	101 8 44	2315	99 23 7	2331
31	Regulus W.	82 28 26	2178	84 17 26	2195	86 6 1	2212	87 54 11	2229
	α Aquilæ E.	74 52 59	2965	73 22 2	2996	71 51 44	3030	70 22 8	3065
	MARS E.	90 40 35	2410	88 57 15	2428	87 14 20	2446	85 31 51	2464
	Fomalhaut E.	98 55 11	2485	97 13 34	2497	95 32 16	2512	93 51 19	2528

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Subtracted from Apparent Time.				
Wed.	1	^h 0 ^m 45 ^s 6.44	9.100	N. 4 50 58.1	+57.65	16 1.97	64.54	^m 3 ^s 43.84	0.754		
Thur.	2	0 48 44.92	9.106	5 13 59.5	57.43	16 1.69	64.56	3 25.81	0.748		
Frid.	3	0 52 23.55	9.113	5 36 55.5	57.21	16 1.41	64.58	3 7.94	0.741		
Sat.	4	0 56 2.36	9.121	5 59 45.8	+56.97	16 1.13	64.60	2 50.24	0.733		
SUN.	5	0 59 41.37	9.130	6 22 30.0	56.71	16 0.84	64.63	2 32.74	0.725		
Mon.	6	1 3 20.59	9.139	6 45 7.8	56.43	16 0.56	64.66	2 15.46	0.715		
Tues.	7	1 7 0.04	9.149	7 7 38.7	+56.14	16 0.28	64.69	1 58.40	0.703		
Wed.	8	1 10 39.75	9.160	7 30 2.6	55.84	16 0.00	64.73	1 41.60	0.694		
Thur.	9	1 14 19.72	9.171	7 52 19.0	55.52	15 59.72	64.77	1 25.06	0.683		
Frid.	10	1 17 59.97	9.183	8 14 27.5	+55.18	15 59.45	64.81	1 8.80	0.671		
Sat.	11	1 21 40.51	9.196	8 36 27.8	54.83	15 59.17	64.85	0 52.84	0.659		
SUN.	12	1 25 21.37	9.209	8 58 19.5	54.47	15 58.90	64.90	0 37.18	0.646		
Mon.	13	1 29 2.54	9.223	9 20 2.2	+54.09	15 58.63	64.94	0 21.84	0.632		
Tues.	14	1 32 44.05	9.237	9 41 35.7	53.69	15 58.37	64.99	0 6.84	0.618		
Wed.	15	1 36 25.90	9.251	10 2 59.4	53.28	15 58.10	65.05	0 7.82	0.603		
Thur.	16	1 40 8.11	9.266	10 24 13.2	+52.86	15 57.84	65.10	0 22.13	0.588		
Frid.	17	1 43 50.69	9.282	10 45 16.6	52.42	15 57.58	65.16	0 36.07	0.573		
Sat.	18	1 47 33.65	9.298	11 6 9.2	51.96	15 57.33	65.22	0 49.63	0.557		
SUN.	19	1 51 17.00	9.315	11 26 50.8	+51.49	15 57.07	65.28	1 2.80	0.540		
Mon.	20	1 55 0.76	9.332	11 47 20.9	51.01	15 56.82	65.34	1 15.56	0.523		
Tues.	21	1 58 44.93	9.350	12 7 39.4	50.52	15 56.57	65.41	1 27.91	0.506		
Wed.	22	2 2 29.53	9.368	12 27 45.8	+50.01	15 56.32	65.47	1 39.83	0.488		
Thur.	23	2 6 14.58	9.386	12 47 39.9	49.49	15 56.07	65.54	1 51.30	0.469		
Frid.	24	2 10 0.08	9.406	13 7 21.4	48.96	15 55.82	65.61	2 2.32	0.450		
Sat.	25	2 13 46.06	9.426	13 26 49.9	+48.41	15 55.57	65.68	2 12.88	0.430		
SUN.	26	2 17 32.52	9.446	13 46 5.2	47.85	15 55.33	65.75	2 22.94	0.409		
Mon.	27	2 21 19.48	9.467	14 5 6.9	47.28	15 55.08	65.82	2 32.51	0.388		
Tues.	28	2 25 6.95	9.489	14 23 54.8	+46.70	15 54.84	65.90	2 41.57	0.367		
Wed.	29	2 28 54.94	9.511	14 42 28.5	46.11	15 54.60	65.98	2 50.12	0.345		
Thur.	30	2 32 43.47	9.533	15 0 47.8	45.50	15 54.36	66.05	2 58.12	0.322		
Frid.	31	2 36 32.54	9.556	N. 15 18 52.4	+44.88	15 54.12	66.13	3 5.58	0.299		

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Added to Mean Time.		
Wed.	1	^h 0 ^m 45 ^s 5.88	9.102	N. 4 50 54.5	+57.68	^m 3 ^s 43.89	0.754	^h 0 ^m 41 ^s 21.99
Thur.	2	0 48 44.40	9.108	5 13 56.2	57.46	3 25.85	0.748	0 45 18.55
Frid.	3	0 52 23.08	9.115	5 36 52.5	57.23	3 7.98	0.741	0 49 15.10
Sat.	4	0 56 1.93	9.123	5 59 43.1	+56.98	2 50.28	0.733	0 53 11.65
SUN.	5	0 59 40.98	9.132	6 22 27.6	56.72	2 32.77	0.725	0 57 8.21
Mon.	6	1 3 20.25	9.141	6 45 5.6	56.44	2 15.48	0.716	1 1 4.76
Tues.	7	1 6 59.74	9.151	7 7 36.9	+56.15	1 58.43	0.706	1 5 1.32
Wed.	8	1 10 39.49	9.162	7 30 1.0	55.85	1 41.62	0.695	1 8 57.87
Thur.	9	1 14 19.50	9.173	7 52 17.6	55.53	1 25.08	0.683	1 12 54.42
Frid.	10	1 17 59.79	9.185	8 14 26.4	+55.19	1 8.82	0.671	1 16 50.98
Sat.	11	1 21 40.38	9.197	8 36 27.0	54.84	0 52.85	0.659	1 20 47.53
SUN.	12	1 25 21.27	9.210	8 58 18.9	54.48	0 37.19	0.646	1 24 44.09
Mon.	13	1 29 2.49	9.224	9 20 1.9	+54.10	0 21.85	0.632	1 28 40.64
Tues.	14	1 32 44.03	9.238	9 41 35.6	53.70	0 6.84	0.618	1 32 37.20
Wed.	15	1 36 25.92	9.253	10 2 59.6	53.29	0 7.83	0.604	1 36 33.75
Thur.	16	1 40 8.17	9.268	10 24 13.5	+52.86	0 22.13	0.589	1 40 30.30
Frid.	17	1 43 50.78	9.284	10 45 17.1	52.42	0 36.07	0.573	1 44 26.86
Sat.	18	1 47 33.78	9.300	11 6 9.9	51.97	0 49.64	0.557	1 48 23.41
SUN.	19	1 51 17.16	9.316	11 26 51.7	+51.50	1 2.81	0.540	1 52 19.97
Mon.	20	1 55 0.95	9.333	11 47 22.0	51.02	1 15.57	0.523	1 56 16.52
Tues.	21	1 58 45.16	9.351	12 7 40.6	50.53	1 27.92	0.506	2 0 13.08
Wed.	22	2 2 29.79	9.369	12 27 47.3	+50.02	1 39.84	0.488	2 4 9.63
Thur.	23	2 6 14.87	9.388	12 47 41.5	49.50	1 51.32	0.469	2 8 6.19
Frid.	24	2 10 0.40	9.407	13 7 23.1	48.97	2 2.34	0.450	2 12 2.74
Sat.	25	2 13 46.41	9.427	13 26 51.7	+48.42	2 12.89	0.430	2 15 59.30
SUN.	26	2 17 32.90	9.447	13 46 7.1	47.86	2 22.96	0.409	2 19 55.85
Mon.	27	2 21 19.88	9.468	14 5 8.9	47.29	2 32.53	0.388	2 23 52.41
Tues.	28	2 25 7.38	9.490	14 23 56.9	+46.70	2 41.59	0.367	2 27 48.96
Wed.	29	2 28 55.39	9.512	14 42 30.7	46.11	2 50.13	0.345	2 31 45.52
Thur.	30	2 32 43.94	9.534	15 0 50.1	45.50	2 58.14	0.322	2 35 42.08
Frid.	31	2 36 33.04	9.557	N. 15 18 54.7	+44.88	3 5.59	0.299	2 39 38.63
Norm.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.								Diff. for 1 Hour, +9°.8565. (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	92	12 15 57.9	15 37.9	147.77	— 0.68	0.0000126	+52.9	^h ^m ^s 23 14 48.87
2	93	13 15 3.3	14 43.2	147.69	0.69	0.0001399	53.1	23 10 52.97
3	94	14 14 6.9	13 46.6	147.61	0.66	0.0002674	53.2	23 6 57.06
4	95	15 13 8.8	12 48.4	147.54	— 0.61	0.0003951	+53.1	23 3 1.15
5	96	16 12 9.0	11 48.5	147.47	0.54	0.0005227	53.1	22 59 5.24
6	97	17 11 7.4	10 46.8	147.40	0.44	0.0006500	53.0	22 55 9.34
7	98	18 10 4.0	9 43.3	147.32	— 0.32	0.0007768	+52.8	22 51 13.43
8	99	19 8 58.9	8 38.0	147.25	0.19	0.0009032	52.5	22 47 17.52
9	100	20 7 52.1	7 31.1	147.18	— 0.06	0.0010290	52.2	22 43 21.61
10	101	21 6 43.4	6 22.3	147.10	+ 0.07	0.0011539	+51.9	22 39 25.70
11	102	22 5 32.8	5 11.6	147.02	0.19	0.0012779	51.5	22 35 29.80
12	103	23 4 20.4	3 59.1	146.94	0.29	0.0014009	51.0	22 31 33.89
13	104	24 3 6.0	2 44.5	146.86	+ 0.37	0.0015228	+50.5	22 27 37.98
14	105	25 1 49.5	1 27.9	146.77	0.43	0.0016435	50.0	22 23 42.07
15	106	26 0 30.9	0 9.2	146.68	0.45	0.0017631	49.6	22 19 46.16
16	107	26 59 10.3	58 48.5	146.60	+ 0.45	0.0018817	+49.1	22 15 50.25
17	108	27 57 47.5	57 25.6	146.51	0.42	0.0019991	48.7	22 11 54.34
18	109	28 56 22.6	56 0.5	146.42	0.36	0.0021155	48.3	22 7 58.43
19	110	29 54 55.5	54 33.2	146.32	+ 0.27	0.0022310	+48.0	22 4 2.52
20	111	30 53 26.2	53 3.8	146.23	0.15	0.0023458	47.7	22 0 6.62
21	112	31 51 54.7	51 32.2	146.14	+ 0.03	0.0024598	47.4	21 56 10.71
22	113	32 50 21.0	49 58.4	146.05	— 0.10	0.0025731	+47.1	21 52 14.80
23	114	33 48 45.3	48 22.5	145.97	0.23	0.0026860	46.9	21 48 18.89
24	115	34 47 7.5	46 44.6	145.88	0.36	0.0027984	46.7	21 44 22.98
25	116	35 45 27.7	45 4.7	145.80	— 0.47	0.0029104	+46.6	21 40 27.07
26	117	36 43 45.9	43 22.8	145.72	0.56	0.0030219	46.5	21 36 31.16
27	118	37 42 2.3	41 39.0	145.65	0.64	0.0031331	46.4	21 32 35.25
28	119	38 40 16.9	39 53.4	145.57	— 0.69	0.0032440	+46.3	21 28 39.34
29	120	39 38 29.7	38 6.1	145.50	0.70	0.0033544	46.1	21 24 43.43
30	121	40 36 40.9	36 17.2	145.43	0.68	0.0034644	45.8	21 20 47.52
31	122	41 34 50.5	34 26.6	145.37	— 0.63	0.0035738	+45.5	21 16 51.61
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st .								Diff. for 1 Hour. — ^g 8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.	
1	16 15.8	16 8.2	59 34.8	-2.26	59 6.9	-2.37	15 34.2	2.52	18.1	
2	16 0.4	15 52.4	58 38.0	2.42	58 8.9	2.41	16 34.4	2.49	19.1	
3	15 44.6	15 37.0	57 40.1	2.37	57 12.1	2.28	17 33.0	2.38	20.1	
4	15 29.7	15 22.8	56 45.3	-2.17	56 20.1	-2.02	18 28.0	2.21	21.1	
5	15 16.5	15 10.6	55 56.8	1.88	55 35.4	1.74	19 18.8	2.02	22.1	
6	15 5.4	15 0.8	55 16.1	1.51	54 59.1	1.33	20 5.3	1.86	23.1	
7	14 56.7	14 53.2	54 44.2	-1.15	54 31.5	-0.97	20 48.4	1.74	24.1	
8	14 50.4	14 48.1	54 21.0	0.79	54 12.5	0.63	21 29.0	1.65	25.1	
9	14 46.3	14 45.0	54 5.9	0.46	54 1.3	0.32	22 8.1	1.62	26.1	
10	14 44.2	14 43.9	53 58.3	-0.18	53 57.0	-0.04	22 46.9	1.62	27.1	
11	14 43.9	14 44.4	53 57.3	+0.08	53 59.0	+0.20	23 26.4	1.67	28.1	
12	14 45.2	14 46.4	54 2.0	0.31	54 6.4	0.42	6		29.1	
13	14 47.9	14 49.8	54 12.0	+0.52	54 18.8	+0.61	0 7.6	1.76	0.3	
14	14 51.9	14 54.4	54 26.7	0.71	54 35.9	0.82	0 51.2	1.88	1.3	
15	14 57.3	15 0.4	54 46.3	0.91	54 57.8	1.01	1 38.1	2.03	2.3	
16	15 3.9	15 7.7	55 10.6	+1.12	55 24.7	+1.23	2 28.4	2.17	3.3	
17	15 11.9	15 16.5	55 40.1	1.34	55 56.8	1.45	3 21.9	2.28	4.3	
18	15 21.4	15 26.6	56 14.8	1.55	56 34.1	1.66	4 17.4	2.34	5.3	
19	15 32.2	15 38.1	56 54.6	+1.75	57 16.2	+1.84	5 13.5	2.32	6.3	
20	15 44.2	15 50.6	57 38.7	1.91	58 2.0	1.96	6 8.6	2.26	7.3	
21	15 57.0	16 3.5	58 25.7	1.98	58 49.4	1.96	7 1.9	2.18	8.3	
22	16 9.8	16 16.0	59 12.8	+1.91	59 35.3	+1.82	7 53.3	2.11	9.3	
23	16 21.7	16 26.9	59 56.4	1.68	60 15.5	1.48	8 43.6	2.08	10.3	
24	16 31.4	16 35.0	60 32.0	1.25	60 45.4	0.96	9 33.7	2.10	11.3	
25	16 37.7	16 39.2	60 55.1	+0.63	61 0.6	+0.28	10 24.9	2.18	12.3	
26	16 39.5	16 38.6	61 1.8	-0.09	60 58.5	-0.47	11 18.5	2.30	13.3	
27	16 36.5	16 33.1	60 50.6	0.84	60 38.3	1.19	12 15.4	2.44	14.3	
28	16 28.7	16 23.3	60 22.0	-1.50	60 2.2	-1.78	13 15.4	2.55	15.3	
29	16 17.1	16 10.2	59 39.4	2.00	59 14.3	2.17	14 17.4	2.59	16.3	
30	16 2.9	15 55.4	58 47.4	2.28	58 19.6	2.34	15 18.8	2.51	17.3	
31	15 47.6	15 40.0	57 51.3	-2.35	57 23.3	-2.30	16 17.3	2.35	18.3	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	15 38 4.81	a. 5546	S. 24 45 43.2	8.583	0	17 41 20.80	a. 5310	S. 28 9 24.6	+ 0.096
1	15 40 38.16	a. 5571	24 54 13.0	8.409	1	17 43 52.55	a. 5273	28 9 13.6	0.270
2	15 43 11.66	a. 5594	25 2 32.3	8.233	2	17 46 24.08	a. 5235	28 8 52.2	0.442
3	15 45 45.29	a. 5616	25 10 41.0	8.057	3	17 48 55.37	a. 5195	28 8 20.5	0.614
4	15 48 19.05	a. 5637	25 18 39.1	7.880	4	17 51 26.42	a. 5154	28 7 38.5	0.786
5	15 50 52.94	a. 5657	25 26 26.6	7.703	5	17 53 57.22	a. 5112	28 6 46.2	0.957
6	15 53 26.94	a. 5676	25 34 3.5	7.525	6	17 56 27.77	a. 5069	28 5 43.6	1.127
7	15 56 1.05	a. 5694	25 41 29.6	7.346	7	17 58 58.05	a. 5024	28 4 30.9	1.296
8	15 58 35.27	a. 5711	25 48 45.0	7.167	8	18 1 28.06	a. 4979	28 3 8.1	1.464
9	16 1 9.58	a. 5728	25 55 49.6	6.987	9	18 3 57.80	a. 4933	28 1 35.2	1.632
10	16 3 43.98	a. 5740	26 2 43.4	6.806	10	18 6 27.26	a. 4885	27 59 52.3	1.798
11	16 6 18.46	a. 5753	26 9 26.3	6.624	11	18 8 56.42	a. 4836	27 57 59.5	1.963
12	16 8 53.02	a. 5766	26 15 58.3	6.443	12	18 11 25.29	a. 4787	27 55 56.8	2.127
13	16 11 27.65	a. 5776	26 22 19.4	6.261	13	18 13 53.86	a. 4736	27 53 44.3	2.290
14	16 14 2.33	a. 5785	26 28 29.6	6.078	14	18 16 22.12	a. 4684	27 51 22.0	2.452
15	16 16 37.07	a. 5794	26 34 28.8	5.896	15	18 18 50.07	a. 4631	27 48 50.1	2.612
16	16 19 11.86	a. 5801	26 40 17.1	5.713	16	18 21 17.70	a. 4578	27 46 8.6	2.772
17	16 21 46.68	a. 5806	26 45 54.4	5.530	17	18 23 45.01	a. 4525	27 43 17.5	2.932
18	16 24 21.53	a. 5810	26 51 20.7	5.347	18	18 26 12.00	a. 4470	27 40 16.8	3.090
19	16 26 56.40	a. 5813	26 56 36.0	5.163	19	18 28 38.65	a. 4414	27 37 6.7	3.246
20	16 29 31.29	a. 5816	27 1 40.3	4.979	20	18 31 4.96	a. 4357	27 33 47.3	3.401
21	16 32 6.19	a. 5816	27 6 33.5	4.795	21	18 33 30.93	a. 4299	27 30 18.6	3.555
22	16 34 41.08	a. 5814	27 11 15.7	4.611	22	18 35 56.55	a. 4240	27 26 40.7	3.708
23	16 37 15.96	a. 5812	S. 27 15 46.8	4.427	23	18 38 21.81	a. 4181	S. 27 22 53.6	3.860
THURSDAY 2.					SATURDAY 4.				
0	16 39 50.83	a. 5809	S. 27 20 6.9	4.242	0	18 40 46.72	a. 4122	S. 27 18 57.5	4.010
1	16 42 25.67	a. 5804	27 24 15.9	4.058	1	18 43 11.27	a. 4061	27 14 52.4	4.160
2	16 45 0.48	a. 5797	27 28 13.9	3.875	2	18 45 35.45	a. 4000	27 10 38.3	4.309
3	16 47 35.24	a. 5789	27 32 0.9	3.691	3	18 47 59.27	a. 3938	27 6 15.3	4.456
4	16 50 9.95	a. 5780	27 35 36.8	3.507	4	18 50 22.71	a. 3875	27 1 43.6	4.602
5	16 52 44.60	a. 5770	27 39 1.7	3.323	5	18 52 45.77	a. 3812	26 57 3.1	4.747
6	16 55 19.19	a. 5758	27 42 15.6	3.139	6	18 55 8.45	a. 3748	26 52 14.0	4.889
7	16 57 53.70	a. 5745	27 45 18.4	2.956	7	18 57 30.75	a. 3684	26 47 16.4	5.031
8	17 0 28.13	a. 5730	27 48 10.3	2.773	8	18 59 52.66	a. 3619	26 42 10.3	5.172
9	17 3 2.46	a. 5713	27 50 51.2	2.590	9	19 2 14.18	a. 3554	26 36 55.7	5.312
10	17 5 36.69	a. 5696	27 53 21.1	2.408	10	19 4 35.31	a. 3489	26 31 32.8	5.451
11	17 8 10.81	a. 5677	27 55 40.1	2.226	11	19 6 56.05	a. 3423	26 26 1.6	5.587
12	17 10 44.82	a. 5657	27 57 48.2	2.044	12	19 9 16.39	a. 3357	26 20 22.3	5.722
13	17 13 18.70	a. 5636	27 59 45.4	1.862	13	19 11 36.33	a. 3290	26 14 34.9	5.857
14	17 15 52.45	a. 5612	28 1 31.7	1.680	14	19 13 55.87	a. 3223	26 8 39.4	5.991
15	17 18 26.05	a. 5587	28 3 7.2	1.502	15	19 16 15.01	a. 3156	26 2 36.0	6.123
16	17 20 59.50	a. 5562	28 4 31.9	1.322	16	19 18 33.74	a. 3088	25 56 24.7	6.253
17	17 23 32.80	a. 5536	28 5 45.8	1.148	17	19 20 52.06	a. 3020	25 50 5.6	6.383
18	17 26 5.93	a. 5507	28 6 49.0	0.964	18	19 23 9.98	a. 2952	25 43 38.8	6.511
19	17 28 38.88	a. 5477	28 7 41.5	0.786	19	19 25 27.49	a. 2884	25 37 4.3	6.638
20	17 31 11.66	a. 5447	28 8 23.3	0.608	20	19 27 44.59	a. 2815	25 30 22.3	6.763
21	17 33 44.25	a. 5415	28 8 54.5	0.431	21	19 30 1.27	a. 2746	25 23 32.8	6.887
22	17 36 16.64	a. 5382	28 9 15.1	0.255	22	19 32 17.54	a. 2677	25 16 35.9	7.009
23	17 38 48.83	a. 5347	28 9 25.1	- 0.079	23	19 34 33.40	a. 2609	25 9 31.7	7.131
24	17 41 20.80	a. 5310	S. 28 9 24.6	+ 0.096	24	19 36 48.85	a. 2540	S. 25 2 20.2	7.252

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	19 36 48.85	2.2540	S. 25 2 20.2	7.252	0	21 17 20.38	1.9480	S. 17 19 36.8	11.577
1	19 39 3.88	2.2471	24 55 1.5	7.371	1	21 19 17.10	1.9457	17 8 0.3	11.699
2	19 41 18.50	2.2402	24 47 35.7	7.497	2	21 21 13.50	1.9374	16 56 20.1	11.701
3	19 43 32.70	2.2332	24 40 3.0	7.603	3	21 23 9.59	1.9333	16 44 36.2	11.762
4	19 45 46.49	2.2263	24 32 23.3	7.719	4	21 25 5.38	1.9278	16 32 48.7	11.822
5	19 47 59.86	2.2193	24 24 36.7	7.828	5	21 27 0.86	1.9222	16 20 57.6	11.880
6	19 50 12.81	2.2124	24 16 43.4	7.944	6	21 28 56.04	1.9172	16 9 3.1	11.937
7	19 52 25.35	2.2055	24 8 43.4	8.056	7	21 30 50.93	1.9123	15 57 5.2	11.994
8	19 54 37.47	2.1986	24 0 36.7	8.166	8	21 32 45.52	1.9074	15 45 3.8	12.051
9	19 56 49.18	2.1918	23 52 23.5	8.274	9	21 34 39.82	1.9027	15 32 59.1	12.106
10	19 59 0.48	2.1849	23 44 3.8	8.382	10	21 36 33.84	1.8980	15 20 51.1	12.160
11	20 1 11.37	2.1780	23 35 37.7	8.488	11	21 38 27.58	1.8933	15 8 39.9	12.212
12	20 3 21.84	2.1711	23 27 5.2	8.593	12	21 40 21.04	1.8887	14 56 25.6	12.264
13	20 5 31.90	2.1643	23 18 26.5	8.696	13	21 42 14.23	1.8842	14 44 8.2	12.316
14	20 7 41.55	2.1575	23 9 41.7	8.798	14	21 44 7.15	1.8797	14 31 47.7	12.367
15	20 9 50.80	2.1507	23 0 50.7	8.900	15	21 45 59.80	1.8753	14 19 24.2	12.416
16	20 11 59.64	2.1440	22 51 53.7	9.000	16	21 47 52.19	1.8710	14 6 57.8	12.464
17	20 14 8.08	2.1372	22 42 50.8	9.097	17	21 49 44.32	1.8667	13 54 28.5	12.512
18	20 16 16.11	2.1305	22 33 42.0	9.195	18	21 51 36.20	1.8626	13 41 56.3	12.560
19	20 18 23.74	2.1238	22 24 27.4	9.291	19	21 53 27.83	1.8585	13 29 21.3	12.606
20	20 20 30.97	2.1172	22 15 7.1	9.386	20	21 55 19.22	1.8544	13 16 43.6	12.650
21	20 22 37.80	2.1105	22 5 41.1	9.480	21	21 57 10.36	1.8504	13 4 3.3	12.693
22	20 24 44.23	2.1039	21 56 9.5	9.572	22	21 59 1.27	1.8465	12 51 20.4	12.737
23	20 26 50.27	2.0974	S. 21 46 32.4	9.663	23	22 0 51.94	1.8426	S. 12 38 34.9	12.780
MONDAY 6.					WEDNESDAY 8.				
0	20 28 55.92	2.0909	S. 21 36 49.9	9.753	0	22 2 42.38	1.8388	S. 12 25 46.8	12.822
1	20 31 1.18	2.0844	21 27 2.1	9.842	1	22 4 32.59	1.8351	12 12 56.3	12.862
2	20 33 6.05	2.0779	21 17 8.9	9.930	2	22 6 22.59	1.8315	12 0 3.4	12.902
3	20 35 10.53	2.0714	21 7 10.5	10.016	3	22 8 12.37	1.8279	11 47 8.0	12.942
4	20 37 14.62	2.0651	20 57 7.0	10.101	4	22 10 1.94	1.8244	11 34 10.3	12.980
5	20 39 18.34	2.0588	20 46 58.4	10.186	5	22 11 51.30	1.8209	11 21 10.4	13.018
6	20 41 21.68	2.0525	20 36 44.7	10.269	6	22 13 40.45	1.8175	11 8 8.2	13.054
7	20 43 24.64	2.0463	20 26 26.1	10.351	7	22 15 29.40	1.8143	10 55 3.9	13.089
8	20 45 27.23	2.0401	20 16 2.6	10.432	8	22 17 18.16	1.8111	10 41 57.5	13.125
9	20 47 29.45	2.0339	20 5 34.3	10.511	9	22 19 6.73	1.8079	10 28 48.9	13.160
10	20 49 31.30	2.0276	19 55 1.3	10.589	10	22 20 55.11	1.8047	10 15 38.3	13.193
11	20 51 32.79	2.0212	19 44 23.6	10.667	11	22 22 43.30	1.8017	10 2 25.8	13.225
12	20 53 33.92	2.0153	19 33 41.2	10.744	12	22 24 31.31	1.7987	9 49 11.3	13.257
13	20 55 34.69	2.0098	19 22 54.3	10.819	13	22 26 19.14	1.7958	9 35 55.0	13.288
14	20 57 35.10	2.0039	19 12 2.9	10.893	14	22 28 6.81	1.7931	9 22 36.8	13.318
15	20 59 35.16	1.9981	19 1 7.1	10.966	15	22 29 54.31	1.7904	9 9 16.8	13.348
16	21 1 34.87	1.9923	18 50 7.0	11.038	16	22 31 41.65	1.7877	8 55 55.0	13.377
17	21 3 34.24	1.9866	18 39 2.6	11.109	17	22 33 28.83	1.7850	8 42 31.6	13.404
18	21 5 33.26	1.9808	18 27 53.9	11.179	18	22 35 15.85	1.7824	8 29 6.5	13.431
19	21 7 31.94	1.9752	18 16 41.1	11.247	19	22 37 2.72	1.7800	8 15 39.8	13.457
20	21 9 30.29	1.9697	18 5 24.2	11.315	20	22 38 49.45	1.7776	8 2 11.6	13.483
21	21 11 28.30	1.9641	17 54 3.3	11.382	21	22 40 36.03	1.7752	7 48 41.8	13.508
22	21 13 25.98	1.9587	17 42 38.4	11.448	22	22 42 22.47	1.7729	7 35 10.6	13.533
23	21 15 23.34	1.9533	17 31 9.5	11.513	23	22 44 8.78	1.7708	7 21 37.9	13.557
24	21 17 20.38	1.9480	S. 17 19 36.8	11.577	24	22 45 54.96	1.7687	S. 7 8 3.8	13.579

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
0	22 45 54.96	1.7687	S. 7 8 3.8	13.579	0	0 9 39.79	1.7469	N. 3 55 58.1	13.812
1	22 47 41.02	1.7666	6 54 28.4	13.601	1	0 11 24.64	1.7481	4 9 46.4	13.799
2	22 49 26.95	1.7645	6 40 51.7	13.622	2	0 13 9.56	1.7493	4 23 34.0	13.786
3	22 51 12.76	1.7626	6 27 13.8	13.642	3	0 14 54.56	1.7507	4 37 20.8	13.772
4	22 52 58.46	1.7608	6 13 34.7	13.662	4	0 16 39.64	1.7520	4 51 6.7	13.757
5	22 54 44.06	1.7591	5 59 54.4	13.681	5	0 18 24.80	1.7534	5 4 51.6	13.740
6	22 56 29.55	1.7574	5 46 13.0	13.699	6	0 20 10.05	1.7550	5 18 35.5	13.723
7	22 58 14.94	1.7557	5 32 30.6	13.716	7	0 21 55.40	1.7566	5 32 18.4	13.706
8	23 0 0.23	1.7541	5 18 47.1	13.733	8	0 23 40.84	1.7582	5 46 0.2	13.688
9	23 1 45.43	1.7526	5 5 2.6	13.749	9	0 25 26.38	1.7598	5 59 41.0	13.670
10	23 3 30.54	1.7512	4 51 17.2	13.764	10	0 27 12.02	1.7616	6 13 20.6	13.649
11	23 5 15.57	1.7498	4 37 30.9	13.779	11	0 28 57.77	1.7635	6 26 58.9	13.628
12	23 7 0.52	1.7485	4 23 43.7	13.793	12	0 30 43.64	1.7654	6 40 36.0	13.607
13	23 8 45.39	1.7472	4 9 55.7	13.806	13	0 32 29.62	1.7673	6 54 11.8	13.585
14	23 10 30.19	1.7461	3 56 7.0	13.818	14	0 34 15.72	1.7694	7 7 46.2	13.562
15	23 12 14.92	1.7450	3 42 17.6	13.829	15	0 36 1.95	1.7715	7 21 19.3	13.539
16	23 13 59.59	1.7440	3 28 27.5	13.841	16	0 37 48.30	1.7736	7 34 50.9	13.514
17	23 15 44.20	1.7430	3 14 36.7	13.852	17	0 39 34.78	1.7759	7 48 21.0	13.489
18	23 17 28.75	1.7421	3 0 45.3	13.861	18	0 41 21.40	1.7782	8 1 49.6	13.463
19	23 19 13.25	1.7413	2 46 53.4	13.869	19	0 43 8.16	1.7805	8 15 16.6	13.436
20	23 20 57.71	1.7406	2 33 1.0	13.877	20	0 44 55.06	1.7828	8 28 41.9	13.408
21	23 22 42.12	1.7398	2 19 8.1	13.885	21	0 46 42.10	1.7852	8 42 5.6	13.381
22	23 24 26.49	1.7393	2 5 14.8	13.892	22	0 48 29.29	1.7878	8 55 27.6	13.352
23	23 26 10.83	1.7388	S. 1 51 21.1	13.898	23	0 50 16.64	1.7905	N. 9 8 47.8	13.321
FRIDAY 10.					SUNDAY 12.				
0	23 27 55.14	1.7383	S. 1 37 27.1	13.903	0	0 52 4.15	1.7932	N. 9 22 6.1	13.290
1	23 29 39.42	1.7378	1 23 32.8	13.908	1	0 53 51.82	1.7959	9 35 22.6	13.259
2	23 31 23.68	1.7375	1 9 38.2	13.912	2	0 55 39.65	1.7986	9 48 37.2	13.226
3	23 33 7.92	1.7372	0 55 43.4	13.914	3	0 57 27.65	1.8014	10 1 49.7	13.192
4	23 34 52.14	1.7369	0 41 48.5	13.916	4	0 59 15.82	1.8043	10 15 0.2	13.158
5	23 36 36.35	1.7368	0 27 53.5	13.918	5	1 1 4.17	1.8072	10 28 8.7	13.123
6	23 38 20.56	1.7367	0 13 58.3	13.920	6	1 2 52.69	1.8103	10 41 15.0	13.087
7	23 40 4.76	1.7367	S. 0 0 3.1	13.920	7	1 4 41.40	1.8134	10 54 19.1	13.050
8	23 41 48.97	1.7368	N. 0 13 52.1	13.919	8	1 6 30.30	1.8165	11 7 21.0	13.013
9	23 43 33.18	1.7369	0 27 47.2	13.918	9	1 8 19.38	1.8196	11 20 20.7	12.975
10	23 45 17.40	1.7372	0 41 42.2	13.916	10	1 10 8.65	1.8228	11 33 18.0	12.935
11	23 47 1.64	1.7375	0 55 37.1	13.913	11	1 11 58.12	1.8262	11 46 12.9	12.895
12	23 48 45.90	1.7378	1 9 31.8	13.910	12	1 13 47.80	1.8296	11 59 5.4	12.854
13	23 50 30.18	1.7382	1 23 26.3	13.906	13	1 15 37.68	1.8330	12 11 55.4	12.812
14	23 52 14.48	1.7386	1 37 20.5	13.901	14	1 17 27.76	1.8364	12 24 42.9	12.769
15	23 53 58.81	1.7391	1 51 14.4	13.895	15	1 19 18.05	1.8400	12 37 27.7	12.725
16	23 55 43.18	1.7397	2 5 7.9	13.888	16	1 21 8.56	1.8437	12 50 9.9	12.681
17	23 57 27.58	1.7403	2 19 1.0	13.882	17	1 22 59.29	1.8473	13 2 49.4	12.636
18	23 59 12.02	1.7411	2 32 53.7	13.874	18	1 24 50.23	1.8509	13 15 26.2	12.590
19	0 0 56.51	1.7419	2 46 45.9	13.866	19	1 26 41.40	1.8547	13 28 0.2	12.542
20	0 2 41.05	1.7428	3 0 37.6	13.857	20	1 28 32.80	1.8585	13 40 31.3	12.493
21	0 4 25.65	1.7437	3 14 28.7	13.847	21	1 30 24.42	1.8623	13 52 59.4	12.444
22	0 6 10.30	1.7447	3 28 19.2	13.836	22	1 32 16.28	1.8663	14 5 24.6	12.395
23	0 7 55.01	1.7457	3 42 9.0	13.824	23	1 34 8.38	1.8703	14 17 46.8	12.344
24	0 9 39.79	1.7469	N. 3 55 58.1	13.812	24	1 36 0.72	1.8743	N. 14 30 5.9	12.292

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	1 36 0.72	1.8743	N. 14 30 5.9	12.892	0	3 11 26.67	2.1144	N. 23 1 44.6	8.651
1	1 37 53.30	1.8784	14 42 21.8	12.839	1	3 13 33.70	2.1199	23 10 19.4	8.529
2	1 39 46.13	1.8826	14 54 34.6	12.186	2	3 15 41.06	2.1255	23 18 48.1	8.427
3	1 41 39.21	1.8867	15 6 44.1	12.131	3	3 17 48.76	2.1311	23 27 10.6	8.323
4	1 43 32.54	1.8909	15 18 50.3	12.076	4	3 19 56.79	2.1366	23 35 26.8	8.217
5	1 45 26.12	1.8952	15 30 53.2	12.019	5	3 22 5.15	2.1422	23 43 36.6	8.110
6	1 47 19.96	1.8995	15 42 52.6	11.961	6	3 24 13.85	2.1477	23 51 40.0	8.003
7	1 49 14.06	1.9039	15 54 48.5	11.902	7	3 26 22.88	2.1532	23 59 37.0	7.895
8	1 51 8.43	1.9083	16 6 40.9	11.843	8	3 28 32.23	2.1587	24 7 27.4	7.785
9	1 53 3.06	1.9127	16 18 29.7	11.783	9	3 30 41.92	2.1642	24 15 11.2	7.675
10	1 54 57.96	1.9173	16 30 14.8	11.722	10	3 32 51.94	2.1697	24 22 48.4	7.565
11	1 56 53.14	1.9219	16 41 56.3	11.660	11	3 35 2.29	2.1752	24 30 18.8	7.450
12	1 58 48.59	1.9265	16 53 34.0	11.596	12	3 37 12.96	2.1806	24 37 42.4	7.336
13	2 0 44.32	1.9312	17 5 7.8	11.532	13	3 39 23.96	2.1861	24 44 59.1	7.222
14	2 2 40.33	1.9358	17 16 37.8	11.467	14	3 41 35.29	2.1915	24 52 9.0	7.107
15	2 4 36.62	1.9406	17 28 3.8	11.400	15	3 43 46.94	2.1968	24 59 11.9	6.990
16	2 6 33.20	1.9454	17 39 25.8	11.332	16	3 45 58.91	2.2022	25 6 7.7	6.871
17	2 8 30.07	1.9502	17 50 43.7	11.264	17	3 48 11.21	2.2077	25 12 56.4	6.752
18	2 10 27.22	1.9550	18 1 57.5	11.195	18	3 50 23.83	2.2129	25 19 38.0	6.632
19	2 12 24.67	1.9600	18 13 7.1	11.125	19	3 52 36.76	2.2182	25 26 12.3	6.511
20	2 14 22.42	1.9649	18 24 12.5	11.054	20	3 54 50.01	2.2235	25 32 39.3	6.390
21	2 16 20.46	1.9698	18 35 13.6	10.982	21	3 57 3.58	2.2287	25 38 59.0	6.267
22	2 18 18.80	1.9748	18 46 10.3	10.908	22	3 59 17.46	2.2339	25 45 11.3	6.143
23	2 20 17.44	1.9799	N. 18 57 2.6	10.833	23	4 1 31.65	2.2390	N. 25 51 16.1	6.017
TUESDAY 14.					THURSDAY 16.				
0	2 22 16.39	1.9831	N. 19 7 50.3	10.758	0	4 3 46.14	2.2441	N. 25 57 13.3	5.891
1	2 24 15.65	1.9902	19 18 33.5	10.682	1	4 6 0.94	2.2492	26 3 3.0	5.764
2	2 26 15.21	1.9953	19 29 12.1	10.604	2	4 8 16.04	2.2542	26 8 45.0	5.636
3	2 28 15.08	2.0005	19 39 46.0	10.525	3	4 10 31.44	2.2592	26 14 19.3	5.507
4	2 30 15.27	2.0057	19 50 15.1	10.446	4	4 12 47.14	2.2641	26 19 45.9	5.378
5	2 32 15.77	2.0109	20 0 39.5	10.366	5	4 15 3.13	2.2691	26 25 4.7	5.247
6	2 34 16.58	2.0162	20 10 59.0	10.284	6	4 17 19.41	2.2737	26 30 15.5	5.114
7	2 36 17.71	2.0215	20 21 13.6	10.202	7	4 19 35.98	2.2785	26 35 18.4	4.982
8	2 38 19.16	2.0268	20 31 23.2	10.118	8	4 21 52.83	2.2833	26 40 13.4	4.849
9	2 40 20.93	2.0322	20 41 27.7	10.033	9	4 24 9.97	2.2880	26 45 0.3	4.714
10	2 42 23.02	2.0375	20 51 27.1	9.947	10	4 26 27.39	2.2926	26 49 39.1	4.579
11	2 44 25.43	2.0429	21 1 21.3	9.859	11	4 28 45.08	2.2970	26 54 9.8	4.442
12	2 46 28.17	2.0483	21 11 10.2	9.771	12	4 31 3.03	2.3014	26 58 32.2	4.305
13	2 48 31.23	2.0537	21 20 53.8	9.682	13	4 33 21.25	2.3059	27 2 46.4	4.167
14	2 50 34.62	2.0592	21 30 32.1	9.592	14	4 35 39.74	2.3103	27 6 52.3	4.028
15	2 52 38.34	2.0647	21 40 4.9	9.501	15	4 37 58.49	2.3146	27 10 49.8	3.888
16	2 54 42.39	2.0702	21 49 32.2	9.408	16	4 40 17.49	2.3188	27 14 38.9	3.748
17	2 56 46.77	2.0757	21 58 53.9	9.315	17	4 42 36.74	2.3229	27 18 19.5	3.607
18	2 58 51.47	2.0812	22 8 10.0	9.221	18	4 44 56.24	2.3270	27 21 51.7	3.465
19	3 0 56.51	2.0867	22 17 20.4	9.125	19	4 47 15.98	2.3309	27 25 15.3	3.322
20	3 3 1.88	2.0922	22 26 25.0	9.028	20	4 49 35.95	2.3348	27 28 30.3	3.178
21	3 5 7.58	2.0977	22 35 23.8	8.931	21	4 51 56.16	2.3387	27 31 36.6	3.033
22	3 7 13.61	2.1032	22 44 16.7	8.832	22	4 54 16.60	2.3425	27 34 34.3	2.888
23	3 9 19.97	2.1088	22 53 3.7	8.732	23	4 56 37.26	2.3461	27 37 23.2	2.742
24	3 11 26.67	2.1144	N. 23 1 44.6	8.631	24	4 58 58.13	2.3497	N. 27 40 3.3	2.595

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	h m s		N. 27 40 3.3	2.395	0	h m s		N. 26 46 37.7	4.908
1	5 1 19.22	2.3533	27 42 34.6	2.447	1	6 56 29.85	2.4077	26 41 38.5	5.066
2	5 3 40.52	2.3566	27 44 57.0	2.500	2	6 58 54.28	2.4064	26 36 29.8	5.223
3	5 6 2.02	2.3599	27 47 10.6	2.552	3	7 1 18.62	2.4050	26 31 11.7	5.380
4	5 8 23.71	2.3632	27 49 15.2	2.604	4	7 3 42.88	2.4036	26 25 44.2	5.537
5	5 10 45.60	2.3664	27 51 10.8	1.853	5	7 6 7.06	2.4022	26 20 7.3	5.693
6	5 13 7.68	2.3695	27 52 57.5	1.703	6	7 8 31.15	2.4007	26 14 21.0	5.849
7	5 15 29.94	2.3724	27 54 35.1	1.551	7	7 10 55.14	2.3990	26 8 25.4	6.004
8	5 17 52.37	2.3752	27 56 3.6	1.398	8	7 13 19.03	2.3973	26 2 20.5	6.159
9	5 20 14.97	2.3780	27 57 22.9	1.246	9	7 15 42.82	2.3956	25 56 6.3	6.313
10	5 22 37.74	2.3807	27 58 33.1	1.093	10	7 18 6.50	2.3937	25 49 42.9	6.467
11	5 25 0.66	2.3833	27 59 34.1	0.940	11	7 20 30.06	2.3917	25 43 10.2	6.621
12	5 27 23.73	2.3858	28 0 25.9	0.786	12	7 22 53.51	2.3897	25 36 28.3	6.774
13	5 29 46.96	2.3883	28 1 8.4	0.632	13	7 25 16.83	2.3877	25 29 37.3	6.927
14	5 32 10.32	2.3905	28 1 41.7	0.477	14	7 27 40.03	2.3856	25 22 37.1	7.079
15	5 34 33.82	2.3927	28 2 5.7	0.322	15	7 30 3.10	2.3834	25 15 27.8	7.231
16	5 36 57.45	2.3948	28 2 20.3	0.166	16	7 32 26.04	2.3812	25 8 9.4	7.382
17	5 39 21.20	2.3968	28 2 25.6	+ 0.011	17	7 34 48.84	2.3788	25 0 42.0	7.532
18	5 41 45.07	2.3988	28 2 21.6	- 0.145	18	7 37 11.50	2.3765	24 53 5.6	7.682
19	5 44 9.05	2.4006	28 2 8.2	0.302	19	7 39 34.02	2.3741	24 45 20.2	7.831
20	5 46 33.14	2.4022	28 1 45.3	0.450	20	7 41 56.39	2.3716	24 37 25.9	7.976
21	5 48 57.32	2.4038	28 1 13.0	0.607	21	7 44 18.61	2.3691	24 29 22.8	8.126
22	5 51 21.60	2.4054	28 0 31.2	0.775	22	7 46 40.68	2.3665	24 21 10.8	8.273
23	5 53 45.97	2.4068	N. 27 59 40.0	0.933	23	7 49 2.59	2.3639	N. 24 12 50.0	8.420
SATURDAY 18.					MONDAY 20.				
0	5 56 10.41	2.4079	N. 27 58 39.3	1.091	0	7 51 24.35	2.3613	N. 24 4 20.4	8.566
1	5 58 34.92	2.4092	27 57 29.1	1.249	1	7 53 45.95	2.3586	23 55 42.1	8.710
2	6 0 59.51	2.4105	27 56 9.4	1.408	2	7 56 7.38	2.3559	23 46 55.2	8.854
3	6 3 24.16	2.4113	27 54 40.1	1.567	3	7 58 28.65	2.3531	23 37 59.6	8.998
4	6 5 48.86	2.4122	27 53 1.3	1.727	4	8 0 49.75	2.3502	23 28 55.4	9.141
5	6 8 13.62	2.4130	27 51 12.9	1.886	5	8 3 10.68	2.3473	23 19 42.7	9.282
6	6 10 38.42	2.4137	27 49 15.0	2.045	6	8 5 31.43	2.3444	23 10 21.5	9.423
7	6 13 3.26	2.4144	27 47 7.5	2.204	7	8 7 52.01	2.3415	23 0 51.9	9.563
8	6 15 28.13	2.4147	27 44 50.5	2.363	8	8 10 12.41	2.3386	22 51 13.9	9.703
9	6 17 53.02	2.4150	27 42 23.9	2.523	9	8 12 32.64	2.3357	22 41 27.5	9.842
10	6 20 17.93	2.4152	27 39 47.7	2.682	10	8 14 52.69	2.3327	22 31 32.9	9.979
11	6 22 42.85	2.4154	27 37 2.0	2.842	11	8 17 12.56	2.3297	22 21 30.1	10.116
12	6 25 7.78	2.4155	27 34 6.7	3.002	12	8 19 32.25	2.3267	22 11 19.0	10.252
13	6 27 32.78	2.4155	27 31 1.8	3.162	13	8 21 51.76	2.3236	22 0 59.8	10.387
14	6 29 57.64	2.4153	27 27 47.3	3.321	14	8 24 11.08	2.3205	21 50 32.5	10.521
15	6 32 22.55	2.4150	27 24 23.3	3.480	15	8 26 30.22	2.3174	21 39 57.3	10.654
16	6 34 47.44	2.4147	27 20 49.7	3.639	16	8 28 49.17	2.3143	21 29 14.1	10.786
17	6 37 12.32	2.4144	27 17 6.6	3.798	17	8 31 7.94	2.3112	21 18 23.0	10.917
18	6 39 37.17	2.4139	27 13 13.9	3.957	18	8 33 26.52	2.3082	21 7 24.0	11.048
19	6 42 1.98	2.4133	27 9 11.7	4.117	19	8 35 44.92	2.3051	20 56 17.2	11.177
20	6 44 26.76	2.4126	27 4 59.9	4.276	20	8 38 3.13	2.3020	20 45 2.7	11.305
21	6 46 51.49	2.4117	27 0 38.6	4.434	21	8 40 21.16	2.2989	20 33 40.6	11.432
22	6 49 16.17	2.4108	26 56 7.8	4.593	22	8 42 39.00	2.2958	20 22 10.9	11.558
23	6 51 40.79	2.4098	26 51 27.5	4.751	23	8 44 56.65	2.2927	20 10 33.6	11.684
24	6 54 5.35	2.4088	N. 26 46 37.7	4.908	24	8 47 14.12	2.2896	N. 19 58 48.8	11.808

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
0	8 47 14.12	2.2856	N. 19 58 48.8	11.808	0	10 34 6.25	2.1810	N. 8 31 7.6	16.349
1	8 49 31.40	2.2865	19 46 56.6	11.932	1	10 36 17.08	2.1801	8 14 44.8	16.410
2	8 51 48.50	2.2874	19 34 57.0	12.054	2	10 38 27.86	2.1793	7 58 18.4	16.469
3	8 54 5.41	2.2883	19 22 50.1	12.175	3	10 40 38.60	2.1786	7 41 48.5	16.527
4	8 56 22.14	2.2773	19 10 36.0	12.295	4	10 42 49.30	2.1780	7 25 15.1	16.584
5	8 58 38.69	2.2743	18 58 14.7	12.413	5	10 44 59.96	2.1774	7 8 38.4	16.638
6	9 0 55.06	2.2713	18 45 46.4	12.531	6	10 47 10.58	2.1769	6 51 58.5	16.692
7	9 3 11.25	2.2683	18 33 11.0	12.648	7	10 49 21.18	2.1765	6 35 15.4	16.744
8	9 5 27.26	2.2653	18 20 28.6	12.763	8	10 51 31.76	2.1761	6 18 29.2	16.796
9	9 7 43.09	2.2624	18 7 39.4	12.878	9	10 53 42.31	2.1758	6 1 40.1	16.848
10	9 9 58.75	2.2595	17 54 43.3	12.992	10	10 55 52.85	2.1756	5 44 48.1	16.899
11	9 12 14.23	2.2565	17 41 40.4	13.105	11	10 58 3.38	2.1755	5 27 53.4	16.954
12	9 14 29.53	2.2536	17 28 30.9	13.213	12	11 0 13.91	2.1755	5 10 56.0	16.976
13	9 16 44.66	2.2508	17 15 14.8	13.323	13	11 2 24.44	2.1756	4 53 56.0	17.080
14	9 18 59.63	2.2481	17 1 52.1	13.433	14	11 4 34.98	2.1757	4 36 53.6	17.060
15	9 21 14.43	2.2453	16 48 22.8	13.541	15	11 6 45.52	2.1758	4 19 48.8	17.099
16	9 23 29.06	2.2425	16 34 47.2	13.646	16	11 8 56.08	2.1761	4 2 41.7	17.137
17	9 25 43.53	2.2397	16 21 5.3	13.751	17	11 11 6.66	2.1765	3 45 32.4	17.178
18	9 27 57.83	2.2370	16 7 17.1	13.855	18	11 13 17.26	2.1769	3 28 21.1	17.205
19	9 30 11.97	2.2344	15 53 22.7	13.957	19	11 15 27.89	2.1775	3 11 7.8	17.237
20	9 32 25.96	2.2319	15 39 22.2	14.058	20	11 17 38.56	2.1782	2 53 52.6	17.267
21	9 34 39.80	2.2293	15 25 15.7	14.158	21	11 19 49.27	2.1788	2 36 35.7	17.296
22	9 36 53.48	2.2268	15 11 3.2	14.257	22	11 22 0.02	2.1796	2 19 17.1	17.328
23	9 39 7.02	2.2244	N. 14 56 44.8	14.354	23	11 24 10.82	2.1805	N. 2 1 57.0	17.347
WEDNESDAY 22.					FRIDAY 24.				
0	9 41 20.41	2.2219	N. 14 42 20.7	14.450	0	11 26 21.68	2.1815	N. 1 44 35.4	17.371
1	9 43 33.65	2.2196	14 27 50.8	14.546	1	11 28 32.60	2.1825	1 27 12.5	17.392
2	9 45 46.76	2.2173	14 13 15.2	14.639	2	11 30 43.58	2.1836	1 9 48.3	17.412
3	9 47 59.73	2.2150	13 58 34.1	14.731	3	11 32 54.63	2.1848	0 52 23.0	17.430
4	9 50 12.56	2.2128	13 43 47.5	14.822	4	11 35 5.76	2.1861	0 34 56.7	17.446
5	9 52 25.26	2.2106	13 28 55.5	14.912	5	11 37 16.97	2.1875	0 17 29.5	17.461
6	9 54 37.83	2.2084	13 13 58.1	15.001	6	11 39 28.26	2.1889	N. 0 0 1.4	17.474
7	9 56 50.27	2.2064	12 58 55.4	15.088	7	11 41 39.64	2.1905	S. 0 17 27.4	17.484
8	9 59 2.60	2.2045	12 43 47.6	15.173	8	11 43 51.12	2.1921	0 34 56.7	17.492
9	10 1 14.81	2.2025	12 28 34.7	15.257	9	11 46 2.69	2.1938	0 52 26.5	17.500
10	10 3 26.90	2.2006	12 13 16.8	15.339	10	11 48 14.37	2.1956	1 9 56.7	17.505
11	10 5 38.88	2.1987	11 57 54.0	15.421	11	11 50 26.16	2.1975	1 27 27.1	17.508
12	10 7 50.75	2.1970	11 42 26.3	15.502	12	11 52 38.07	2.1993	1 44 57.7	17.510
13	10 10 2.52	2.1953	11 26 53.9	15.579	13	11 54 50.10	2.2015	2 2 28.3	17.509
14	10 12 14.19	2.1937	11 11 16.8	15.657	14	11 57 2.25	2.2036	2 19 58.8	17.507
15	10 14 25.76	2.1921	10 55 35.1	15.733	15	11 59 14.53	2.2058	2 37 29.1	17.505
16	10 16 37.24	2.1906	10 39 48.9	15.807	16	12 1 26.94	2.2081	2 54 59.1	17.497
17	10 18 48.63	2.1892	10 23 58.3	15.880	17	12 3 39.50	2.2105	3 12 28.7	17.488
18	10 20 59.94	2.1878	10 8 3.3	15.952	18	12 5 52.20	2.2129	3 29 57.7	17.478
19	10 23 11.17	2.1865	9 52 4.1	16.021	19	12 8 5.05	2.2155	3 47 26.1	17.467
20	10 25 22.32	2.1852	9 36 0.8	16.089	20	12 10 18.06	2.2182	4 4 53.7	17.453
21	10 27 33.40	2.1841	9 19 53.4	16.157	21	12 12 31.23	2.2208	4 22 20.4	17.437
22	10 29 44.41	2.1830	9 3 42.0	16.223	22	12 14 44.56	2.2236	4 39 46.1	17.418
23	10 31 55.36	2.1820	8 47 26.7	16.287	23	12 16 58.06	2.2265	4 57 10.6	17.398
24	10 34 6.25	2.1810	N. 8 31 7.6	16.349	24	12 19 11.74	2.2295	S. 5 14 33.9	17.377

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 25.					MONDAY 27.				
0	12 19 11.74	2.2295	S. 5 14 33.9	17.377	0	14 10 54.37	2.4447	S. 18 4 26.2	13.899
1	12 21 25.60	2.2325	5 31 55.8	17.353	1	14 13 21.21	2.4500	18 18 16.5	13.776
2	12 23 39.64	2.2356	5 49 16.2	17.328	2	14 15 48.37	2.4554	18 31 59.3	13.651
3	12 25 53.87	2.2388	6 6 35.1	17.300	3	14 18 15.86	2.4608	18 45 34.6	13.524
4	12 28 8.30	2.2421	6 23 52.2	17.270	4	14 20 43.67	2.4661	18 59 2.2	13.395
5	12 30 22.92	2.2454	6 41 7.5	17.238	5	14 23 11.79	2.4713	19 12 22.0	13.263
6	12 32 37.74	2.2488	6 58 20.8	17.204	6	14 25 40.22	2.4765	19 25 33.8	13.130
7	12 34 52.77	2.2523	7 15 32.0	17.168	7	14 28 8.97	2.4818	19 38 37.6	12.996
8	12 37 8.02	2.2559	7 32 41.0	17.130	8	14 30 38.04	2.4871	19 51 33.3	12.860
9	12 39 23.48	2.2595	7 49 47.6	17.089	9	14 33 7.43	2.4924	20 4 20.8	12.722
10	12 41 39.16	2.2632	8 6 51.7	17.047	10	14 35 37.13	2.4975	20 16 59.9	12.581
11	12 43 55.07	2.2670	8 23 53.3	17.004	11	14 38 7.13	2.5026	20 29 30.5	12.439
12	12 46 11.20	2.2708	8 40 52.2	16.958	12	14 40 37.44	2.5077	20 41 52.6	12.296
13	12 48 27.57	2.2748	8 57 48.3	16.910	13	14 43 8.06	2.5128	20 54 6.0	12.150
14	12 50 44.18	2.2788	9 14 41.4	16.859	14	14 45 38.98	2.5179	21 6 10.6	12.002
15	12 53 1.03	2.2828	9 31 31.4	16.807	15	14 48 10.21	2.5229	21 18 6.3	11.853
16	12 55 18.12	2.2870	9 48 18.2	16.752	16	14 50 41.73	2.5278	21 29 53.0	11.702
17	12 57 35.47	2.2912	10 5 1.6	16.695	17	14 53 13.55	2.5327	21 41 30.6	11.550
18	12 59 53.07	2.2955	10 21 41.6	16.637	18	14 55 45.66	2.5376	21 52 59.0	11.397
19	13 2 10.93	2.2998	10 38 18.0	16.576	19	14 58 18.06	2.5423	22 4 18.2	11.241
20	13 4 29.05	2.3042	10 54 50.7	16.512	20	15 0 50.74	2.5471	22 15 27.9	11.083
21	13 6 47.43	2.3086	11 11 19.5	16.447	21	15 3 23.71	2.5518	22 26 28.1	10.923
22	13 9 6.08	2.3131	11 27 44.4	16.381	22	15 5 56.96	2.5563	22 37 18.7	10.763
23	13 11 25.00	2.3177	S. 11 44 5.2	16.312	23	15 8 30.47	2.5608	S. 22 47 59.7	10.602
SUNDAY 26.					TUESDAY 28.				
0	13 13 44.20	2.3223	S. 12 0 21.8	16.240	0	15 11 4.25	2.5653	S. 22 58 30.9	10.438
1	13 16 3.68	2.3270	12 16 34.0	16.167	1	15 13 38.30	2.5696	23 8 52.2	10.273
2	13 18 23.44	2.3317	12 32 41.8	16.092	2	15 16 12.61	2.5739	23 19 3.6	10.107
3	13 20 43.48	2.3364	12 48 45.0	16.013	3	15 18 47.17	2.5781	23 29 5.0	9.939
4	13 23 3.81	2.3412	13 4 43.4	15.933	4	15 21 21.98	2.5822	23 38 56.3	9.770
5	13 25 24.43	2.3461	13 20 37.0	15.852	5	15 23 57.03	2.5862	23 48 37.4	9.600
6	13 27 45.34	2.3510	13 36 25.6	15.768	6	15 26 32.32	2.5901	23 58 8.3	9.428
7	13 30 6.55	2.3560	13 52 9.1	15.682	7	15 29 7.84	2.5939	24 7 28.8	9.255
8	13 32 28.06	2.3610	14 7 47.4	15.593	8	15 31 43.59	2.5976	24 16 38.9	9.081
9	13 34 49.87	2.3661	14 23 20.3	15.503	9	15 34 19.55	2.6011	24 25 38.5	8.905
10	13 37 11.99	2.3712	14 38 47.8	15.411	10	15 36 55.72	2.6046	24 34 27.5	8.728
11	13 39 34.41	2.3762	14 54 9.6	15.316	11	15 39 32.10	2.6080	24 43 5.9	8.551
12	13 41 57.13	2.3813	15 9 25.7	15.219	12	15 42 8.68	2.6112	24 51 33.6	8.372
13	13 44 20.16	2.3865	15 24 35.9	15.120	13	15 44 45.45	2.6144	24 59 50.5	8.192
14	13 46 43.51	2.3917	15 39 40.1	15.020	14	15 47 22.41	2.6174	25 7 56.6	8.012
15	13 49 7.17	2.3969	15 54 38.3	14.917	15	15 49 59.54	2.6202	25 15 51.9	7.831
16	13 51 31.14	2.4022	16 9 30.2	14.812	16	15 52 36.84	2.6230	25 23 36.3	7.647
17	13 53 55.43	2.4075	16 24 15.7	14.705	17	15 55 14.30	2.6257	25 31 9.6	7.463
18	13 56 20.04	2.4128	16 38 54.8	14.597	18	15 57 51.92	2.6282	25 38 31.9	7.279
19	13 58 44.97	2.4181	16 53 27.3	14.485	19	16 0 29.69	2.6306	25 45 43.1	7.094
20	14 1 10.21	2.4234	17 7 53.0	14.372	20	16 3 7.59	2.6328	25 52 43.2	6.908
21	14 3 35.77	2.4287	17 22 11.9	14.257	21	16 5 45.62	2.6349	25 59 32.1	6.722
22	14 6 1.65	2.4340	17 36 23.8	14.139	22	16 8 23.78	2.6368	26 6 9.8	6.534
23	14 8 27.85	2.4393	17 50 28.6	14.020	23	16 11 2.04	2.6385	26 12 36.2	6.346
24	14 10 54.37	2.4447	S. 18 4 26.2	13.899	24	16 13 40.40	2.6402	S. 26 18 51.3	6.157

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
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WEDNESDAY 29.

	^h ^m ^s	^s	[°] ['] ["]	["]
0	16 13 40.40	2.6402	S. 26 18 51.3	6.157
1	16 16 18.86	2.6418	26 24 55.1	5.968
2	16 18 57.41	2.6431	26 30 47.5	5.778
3	16 21 36.03	2.6442	26 36 28.5	5.588
4	16 24 14.72	2.6453	26 41 58.1	5.397
5	16 26 53.47	2.6462	26 47 16.2	5.207
6	16 29 32.26	2.6468	26 52 22.9	5.016
7	16 32 11.09	2.6474	26 57 18.1	4.824
8	16 34 49.95	2.6478	27 2 1.8	4.632
9	16 37 28.83	2.6481	27 6 33.9	4.439
10	16 40 7.72	2.6482	27 10 54.5	4.247
11	16 42 46.61	2.6480	27 15 3.6	4.055
12	16 45 25.48	2.6477	27 19 1.1	3.863
13	16 48 4.33	2.6473	27 22 47.1	3.671
14	16 50 43.16	2.6468	27 26 21.6	3.478
15	16 53 21.95	2.6461	27 29 44.5	3.286
16	16 56 0.69	2.6451	27 32 55.9	3.093
17	16 58 39.36	2.6439	27 35 55.7	2.901
18	17 1 17.96	2.6427	27 38 44.0	2.709
19	17 3 56.49	2.6413	27 41 20.8	2.518
20	17 6 34.92	2.6397	27 43 46.1	2.327
21	17 9 13.25	2.6380	27 46 0.0	2.136
22	17 11 51.48	2.6361	27 48 2.4	1.945
23	17 14 29.58	2.6339	S. 27 49 53.4	1.754

THURSDAY 30.

	^h ^m ^s	^s	[°] ['] ["]	["]
0	17 17 7.55	2.6317	S. 27 51 32.9	1.563
1	17 19 45.38	2.6293	27 53 1.0	1.374
2	17 22 23.06	2.6268	27 54 17.8	1.186
3	17 25 0.59	2.6240	27 55 23.3	0.997
4	17 27 37.94	2.6210	27 56 17.5	0.809
5	17 30 15.11	2.6180	27 57 0.4	0.622
6	17 32 52.10	2.6147	27 57 32.1	0.435
7	17 35 28.89	2.6114	27 57 52.6	0.249
8	17 38 5.47	2.6078	27 58 2.0	-0.064
9	17 40 41.83	2.6042	27 58 0.3	+0.120
10	17 43 17.97	2.6003	27 57 47.6	0.304
11	17 45 53.87	2.5963	27 57 23.9	0.487
12	17 48 29.53	2.5922	27 56 49.2	0.669
13	17 51 4.94	2.5880	27 56 3.6	0.850
14	17 53 40.09	2.5835	27 55 7.2	1.029
15	17 56 14.96	2.5789	27 54 0.1	1.208
16	17 58 49.56	2.5743	27 52 42.3	1.386
17	18 1 23.88	2.5695	27 51 13.8	1.565
18	18 3 57.90	2.5645	27 49 34.7	1.739
19	18 6 31.62	2.5594	27 47 45.1	1.914
20	18 9 5.03	2.5542	27 45 45.0	2.088
21	18 11 38.12	2.5488	27 43 34.5	2.261
22	18 14 10.89	2.5434	27 41 13.7	2.432
23	18 16 43.33	2.5378	27 38 42.6	2.602
24	18 19 15.43	2.5321	S. 27 36 1.4	2.771

FRIDAY, MAY 1.

^h ^m ^s	^s	[°] ['] ["]	["]
0 18 19 15.43	2.5321	S. 27 36 1.4	2.771

PHASES OF THE MOON.

	^d ^h ^m
☾ Last Quarter April	4 12 24.1
● New Moon	12 16 22.8
☾ First Quarter	20 10 46.7
○ Full Moon	27 1 47.2

	^d ^h
☾ Apogee April	10 15.7
☾ Perigee	25 21.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	Regulus W.	89 41 55	2247	91 29 13	2264	93 16 5	2283	95 2 30	2301
	Spica W.	35 42 22	2253	37 29 30	2270	39 16 13	2288	41 2 30	2306
	α Aquilæ E.	68 53 15	3103	67 25 9	3143	65 57 52	3187	64 31 27	3231
	MARS E.	83 49 47	2482	82 8 9	2502	80 26 58	2530	78 46 13	2559
	Fomalhaut E.	92 10 45	2545	90 30 34	2562	88 50 47	2581	87 11 26	2600
	VENUS E.	108 3 33	2638	106 25 29	2657	104 47 51	2677	103 10 40	2696
	SUN E.	133 59 10	2569	132 19 32	2587	130 40 19	2606	129 1 32	2624
2	Regulus W.	103 47 54	2394	105 31 38	2412	107 14 55	2431	108 57 45	2450
	Spica W.	49 47 20	2398	51 30 58	2417	53 14 9	2435	54 56 54	2454
	α Aquilæ E.	57 33 42	3304	56 13 22	3368	54 54 13	3638	53 36 20	3711
	MARS E.	70 29 10	2638	68 51 6	2658	67 13 30	2678	65 36 21	2698
	Fomalhaut E.	79 1 29	2706	77 24 57	2729	75 48 55	2753	74 13 25	2777
	VENUS E.	95 11 28	2799	93 36 59	2820	92 2 57	2841	90 29 22	2862
	SUN E.	120 54 9	2723	119 18 0	2744	117 42 18	2764	116 7 3	2784
3	Spica W.	63 24 3	2547	65 4 11	2565	66 43 54	2583	68 23 12	2601
	SATURN W.	38 30 43	2621	40 9 10	2632	41 47 21	2645	43 25 15	2657
	MARS E.	57 37 11	2797	56 2 39	2817	54 28 33	2836	52 54 52	2855
	Fomalhaut E.	66 24 9	2909	64 52 1	2937	63 20 29	2966	61 49 34	2997
	VENUS E.	82 48 8	2965	81 17 12	2985	79 46 41	3005	78 16 35	3026
	SUN E.	108 17 19	2883	106 44 39	2904	105 12 25	2924	103 40 36	2942
4	Spica W.	76 33 42	2687	78 10 39	2704	79 47 14	2720	81 23 27	2736
	SATURN W.	51 30 17	2726	53 6 22	2740	54 42 9	2754	56 17 37	2768
	Antares W.	30 39 48	2686	32 16 47	2702	33 53 24	2719	35 29 39	2735
	MARS E.	45 12 28	2947	43 41 9	2965	42 10 12	2982	40 39 37	2999
	Fomalhaut E.	54 24 45	3163	52 57 52	3200	51 31 43	3240	50 6 21	3281
	VENUS E.	70 52 12	3123	69 24 30	3141	67 57 10	3159	66 30 12	3178
	SUN E.	96 7 30	3036	94 38 2	3055	93 8 57	3072	91 40 13	3089
5	Spica W.	89 19 26	2811	90 53 40	2825	92 27 35	2838	94 1 13	2852
	SATURN W.	64 10 31	2835	65 44 14	2847	67 17 41	2859	68 50 52	2872
	Antares W.	43 25 49	2808	45 0 6	2823	46 34 4	2836	48 7 45	2850
	Fomalhaut E.	43 12 16	3323	41 52 19	3384	40 33 27	3648	39 15 44	3717
	VENUS E.	59 20 37	3262	57 55 41	3278	56 31 4	3294	55 6 45	3308
	SUN E.	84 21 41	3171	82 54 57	3186	81 28 31	3200	80 2 22	3215
6	Spica W.	101 45 19	2912	103 17 23	2923	104 49 13	2933	106 20 50	2943
	SATURN W.	76 33 0	2927	78 4 44	2939	79 36 14	2948	81 7 32	2958
	Antares W.	55 52 3	2910	57 24 9	2920	58 56 2	2931	60 27 41	2941
	VENUS E.	48 9 23	3379	46 46 42	3392	45 24 16	3405	44 2 5	3416
	SUN E.	72 55 47	3282	71 31 14	3294	70 6 55	3305	68 42 49	3317
7	SATURN W.	88 41 8	3001	90 11 19	3009	91 41 21	3017	93 11 13	3023
	Antares W.	68 2 58	2985	69 33 29	2993	71 3 50	3001	72 34 2	3008
	VENUS E.	37 14 26	3473	35 53 32	3483	34 32 49	3493	33 12 17	3504
	SUN E.	61 45 28	3367	60 22 34	3375	58 59 49	3384	57 37 14	3392
8	SATURN W.	100 38 33	3054	102 7 39	3059	103 36 39	3065	105 5 32	3069
	Antares W.	80 2 59	3038	81 32 25	3043	83 1 45	3047	84 31 0	3052
	SUN E.	50 46 30	3428	49 24 45	3433	48 3 6	3439	46 41 34	3445

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	Regulus W.	96 48 29	2320	98 34 0	2337	100 19 5	2356	102 3 43	2375
	Spica W.	42 48 21	2324	44 33 46	2342	46 18 44	2361	48 3 15	2379
	α Aquilæ E.	63 5 55	2320	61 41 20	2331	60 17 44	2335	58 55 10	2443
	MARS E.	77 5 54	2359	75 26 2	2379	73 46 38	2398	72 7 40	2618
	Fomalhaut E.	85 32 31	2620	83 54 3	2640	82 16 3	2661	80 38 31	2684
	VENUS E.	101 33 55	2716	99 57 37	2738	98 21 47	2758	96 46 24	2779
	SUN E.	127 23 10	2644	125 45 15	2665	124 7 46	2684	122 30 44	2704
2	Regulus W.	110 40 8	2469	112 22 5	2488	114 3 35	2507	115 44 39	2525
	Spica W.	56 39 12	2472	58 21 4	2491	60 2 30	2510	61 43 30	2529
	α Aquilæ E.	52 19 45	2791	51 4 33	2875	49 50 48	2965	48 38 34	4068
	MARS E.	63 59 38	2718	62 23 22	2738	60 47 32	2757	59 12 8	2778
	Fomalhaut E.	72 38 27	2802	71 4 2	2828	69 30 10	2854	67 56 52	2881
	VENUS E.	88 56 14	2883	87 23 33	2905	85 51 18	2924	84 19 30	2945
	SUN E.	114 32 14	2805	112 57 52	2824	111 23 55	2844	109 50 24	2864
3	Spica W.	70 2 6	2619	71 40 35	2636	73 18 41	2654	74 56 23	2671
	SATURN W.	45 2 52	2671	46 40 11	2685	48 17 11	2698	49 53 53	2712
	MARS E.	51 21 35	2873	49 48 42	2893	48 16 14	2911	46 44 9	2930
	Fomalhaut E.	60 19 17	3028	58 49 39	3060	57 20 40	3093	55 52 22	3127
	VENUS E.	76 46 54	3045	75 17 37	3065	73 48 45	3085	72 20 17	3104
	SUN E.	102 9 11	2962	100 38 11	2981	99 7 34	2999	97 37 20	3018
4	Spica W.	82 59 19	2751	84 34 51	2767	86 10 2	2782	87 44 54	2797
	SATURN W.	57 52 47	2782	59 27 39	2795	61 2 14	2808	62 36 31	2821
	Antares W.	37 5 33	2750	38 41 7	2766	40 16 20	2780	41 51 14	2795
	MARS E.	39 9 23	3016	37 39 30	3032	36 9 57	3048	34 40 44	3064
	Fomalhaut E.	48 41 47	3324	47 18 3	3369	45 55 11	3417	44 33 14	3470
	VENUS E.	65 3 36	3195	63 37 21	3212	62 11 26	3230	60 45 52	3246
	SUN E.	90 11 50	3106	88 43 48	3123	87 16 6	3139	85 48 44	3155
5	Spica W.	95 34 34	2865	97 7 38	2876	98 40 27	2889	100 13 0	2900
	SATURN W.	70 23 47	2883	71 56 27	2895	73 28 52	2906	75 1 3	2917
	Antares W.	49 41 8	2862	51 14 15	2875	52 47 6	2887	54 19 42	2898
	Fomalhaut E.	37 59 15	3792	36 44 5	3876	35 30 21	3967	34 18 9	4069
	VENUS E.	53 42 43	3324	52 18 59	3338	50 55 31	3351	49 32 19	3365
	SUN E.	78 36 31	3229	77 10 56	3243	75 45 38	3256	74 20 35	3269
6	Spica W.	107 52 14	2954	109 23 25	2962	110 54 25	2972	112 25 13	2980
	SATURN W.	82 38 38	2967	84 9 32	2976	85 40 15	2985	87 10 47	2993
	Antares W.	61 59 8	2951	63 30 22	2962	65 1 25	2969	66 32 17	2977
	VENUS E.	42 40 7	3428	41 18 22	3440	39 56 51	3451	38 35 32	3463
	SUN E.	67 18 57	3327	65 55 17	3338	64 31 49	3348	63 8 33	3358
7	SATURN W.	94 40 57	3030	96 10 32	3036	97 40 0	3043	99 9 20	3048
	Antares W.	74 4 5	3014	75 34 0	3021	77 3 47	3026	78 33 27	3033
	VENUS E.	31 51 57	3513	30 31 47	3524	29 11 49	3534	27 52 2	3543
	SUN E.	56 14 48	3400	54 52 31	3408	53 30 23	3415	52 8 23	3421
8	SATURN W.	106 34 20	3073	108 3 2	3078	109 31 39	3081	111 0 12	3085
	Antares W.	86 0 9	3055	87 29 14	3059	88 58 14	3062	90 27 10	3065
	SUN E.	45 20 8	3450	43 58 48	3454	42 37 33	3460	41 16 24	3463

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Antares	W.	91 56 3	3067	93 24 53	3069	94 53 40	3071	96 22 25	3073
	α Aquilæ	W.	47 34 26	4600	48 36 51	4533	49 40 14	4472	50 44 31	4414
	SUN	E.	39 55 19	3468	38 34 19	3472	37 13 24	3477	35 52 34	3480
10	Antares	W.	103 45 42	3076	105 14 18	3078	106 42 54	3078	108 11 30	3078
	α Aquilæ	W.	56 17 43	4186	57 26 22	4151	58 35 35	4116	59 45 21	4085
	SUN	E.	29 9 28	3501	27 49 5	3505	26 28 46	3510	25 8 33	3515
14	SUN	W.	15 14 55	3500	16 35 19	3476	17 56 10	3454	19 17 26	3434
	Pollux	E.	71 51 2	2999	70 20 48	2993	68 50 27	2989	67 20 0	2983
	JUPITER	E.	80 10 16	3016	78 40 23	3011	77 10 24	3005	75 40 18	3001
	Regulus	E.	108 44 18	2991	107 13 54	2985	105 43 23	2980	104 12 45	2974
15	SUN	W.	26 8 39	3360	27 31 41	3349	28 54 56	3338	30 18 24	3327
	Pollux	E.	59 46 0	2954	58 14 50	2948	56 43 32	2942	55 12 7	2935
	JUPITER	E.	68 8 4	2970	66 37 14	2965	65 6 17	2958	63 35 12	2951
	Regulus	E.	96 37 47	2944	95 6 24	2938	93 34 53	2931	92 3 13	2924
16	SUN	W.	37 18 49	3275	38 43 30	3265	40 8 23	3254	41 33 28	3243
	Pollux	E.	47 32 53	2901	46 0 36	2894	44 28 10	2887	42 55 34	2880
	JUPITER	E.	55 57 33	2915	54 25 33	2908	52 53 24	2900	51 21 5	2891
	Regulus	E.	84 22 40	2887	82 50 5	2879	81 17 19	2871	79 44 23	2863
17	SUN	W.	48 42 2	3190	50 8 23	3178	51 34 58	3168	53 1 46	3157
	JUPITER	E.	43 36 48	2848	42 3 23	2839	40 29 46	2830	38 55 57	2821
	Regulus	E.	71 56 58	2818	70 22 54	2808	68 48 37	2799	67 14 8	2788
18	SUN	W.	60 19 15	3096	61 47 29	3083	63 15 59	3071	64 44 44	3058
	Regulus	E.	59 18 18	2736	57 42 26	2724	56 6 18	2713	54 29 55	2701
	Spica	E.	113 19 58	2738	111 44 9	2727	110 8 5	2716	108 31 46	2704
19	SUN	W.	72 12 36	2989	73 43 2	2976	75 13 45	2962	76 44 46	2946
	Aldebaran	W.	34 58 31	2863	36 31 37	2834	38 5 21	2805	39 39 42	2779
	Regulus	E.	46 23 58	2639	44 45 56	2626	43 7 36	2613	41 28 59	2599
	Spica	E.	100 26 7	2641	98 48 8	2629	97 9 52	2615	95 31 18	2601
20	SUN	W.	84 24 35	2871	85 57 31	2856	87 30 46	2840	89 4 22	2825
	Aldebaran	W.	47 39 35	2663	49 17 4	2643	50 55 1	2623	52 33 25	2602
	Spica	E.	87 13 47	2532	85 33 18	2518	83 52 30	2504	82 11 22	2489
	SATURN	E.	111 27 13	2550	109 47 9	2534	108 6 43	2519	106 25 56	2504
21	SUN	W.	96 57 29	2745	98 33 9	2729	100 9 11	2713	101 45 33	2697
	Aldebaran	W.	60 52 7	2504	62 33 9	2490	64 14 36	2472	65 56 28	2455
	Spica	E.	73 40 31	2415	71 57 18	2400	70 13 43	2385	68 29 47	2371
	SATURN	E.	97 56 42	2427	96 13 46	2412	94 30 29	2397	92 46 50	2382
22	SUN	W.	109 52 44	2618	111 31 14	2604	113 10 4	2588	114 49 15	2574
	Aldebaran	W.	74 31 50	2372	76 16 5	2356	78 0 43	2341	79 45 43	2326
	Pollux	W.	31 24 11	2320	33 9 42	2303	34 55 37	2286	36 41 57	2270
	Spica	E.	59 44 45	2296	57 58 40	2282	56 12 14	2267	54 25 26	2253
	SATURN	E.	84 3 12	2309	82 17 25	2294	80 31 17	2281	78 44 49	2266
	Antares	E.	105 37 14	2293	103 51 4	2279	102 4 33	2264	100 17 41	2250

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
9	Antares	W.	97 51 7	3075	99 19 47	3075	100 48 27	3077	102 17 5	3078
	α Aquilæ	W.	51 49 40	4361	52 55 37	4313	54 2 18	4267	55 9 41	4226
	SUN	E.	34 31 48	3484	33 11 6	3488	31 50 29	3492	30 29 56	3497
10	Antares	W.	109 40 7	3077	111 8 45	3077	112 37 23	3076	114 6 2	3074
	α Aquilæ	W.	60 55 37	4055	62 6 22	4029	63 17 33	4003	64 29 10	3978
	SUN	E.	23 48 25	3521	22 28 24	3529	21 8 32	3538	19 48 50	3551
14	SUN	W.	20 39 4	3416	22 1 2	3400	23 23 18	3386	24 45 51	3372
	Pollux	E.	65 49 26	2977	64 18 45	2972	62 47 57	2966	61 17 2	2961
	JUPITER	E.	74 10 6	2995	72 39 47	2989	71 9 20	2983	69 38 46	2977
	Regulus	E.	102 42 0	2969	101 11 8	2963	99 40 9	2957	98 9 2	2950
15	SUN	W.	31 42 4	3316	33 5 57	3306	34 30 2	3295	35 54 19	3284
	Pollux	E.	53 40 33	2929	52 8 51	2922	50 37 0	2916	49 5 1	2909
	JUPITER	E.	62 3 58	2945	60 32 36	2937	59 1 4	2930	57 29 23	2923
	Regulus	E.	90 31 25	2917	88 59 28	2909	87 27 21	2902	85 55 5	2895
16	SUN	W.	42 58 46	3233	44 24 16	3222	45 49 59	3212	47 15 54	3201
	Pollux	E.	41 22 49	2872	39 49 54	2865	38 16 50	2857	36 43 36	2850
	JUPITER	E.	49 48 35	2883	48 15 55	2875	46 43 4	2866	45 10 2	2857
	Regulus	E.	78 11 17	2855	76 38 0	2845	75 4 31	2836	73 30 50	2828
17	SUN	W.	54 28 47	3145	55 56 2	3133	57 23 32	3121	58 51 16	3109
	JUPITER	E.	37 21 56	2811	35 47 42	2801	34 13 15	2791	32 38 35	2782
	Regulus	E.	65 39 25	2779	64 4 29	2769	62 29 20	2757	60 53 56	2747
18	SUN	W.	66 13 45	3044	67 43 3	3031	69 12 37	3018	70 42 28	3004
	Regulus	E.	52 53 16	2689	51 16 21	2677	49 39 10	2665	48 1 43	2652
	Spica	E.	106 55 11	2692	105 18 20	2679	103 41 12	2667	102 3 48	2655
19	SUN	W.	78 16 6	2931	79 47 45	2917	81 19 42	2901	82 51 59	2887
	Aldebaran	W.	41 14 37	2754	42 50 5	2730	44 26 5	2707	46 2 35	2685
	Regulus	E.	39 50 3	2586	38 10 49	2572	36 31 16	2559	34 51 24	2544
	Spica	E.	93 52 25	2588	92 13 14	2574	90 33 44	2561	88 53 55	2547
20	SUN	W.	90 38 18	2808	92 12 35	2793	93 47 12	2777	95 22 10	2761
	Aldebaran	W.	54 12 17	2583	55 51 35	2564	57 31 20	2545	59 11 31	2527
	Spica	E.	80 29 53	2475	78 48 4	2460	77 5 54	2445	75 23 23	2430
	SATURN	E.	104 44 48	2489	103 3 19	2473	101 21 28	2458	99 39 16	2443
21	SUN	W.	103 22 17	2681	104 59 22	2666	106 36 48	2650	108 14 35	2634
	Aldebaran	W.	67 38 44	2438	69 21 25	2421	71 4 30	2405	72 47 58	2388
	Spica	E.	66 45 30	2355	65 0 51	2341	63 15 51	2326	61 30 29	2311
	SATURN	E.	91 2 49	2367	89 18 27	2352	87 33 43	2337	85 48 38	2323
22	SUN	W.	116 28 46	2559	118 8 37	2545	119 48 48	2530	121 29 19	2517
	Aldebaran	W.	81 31 5	2311	83 16 48	2296	85 2 53	2283	86 49 18	2268
	Pollux	W.	38 28 40	2255	40 15 46	2239	42 3 15	2225	43 51 5	2210
	Spica	E.	52 38 18	2239	50 50 49	2226	49 3 0	2212	47 14 51	2199
	SATURN	E.	76 58 0	2253	75 10 52	2240	73 23 24	2227	71 35 37	2214
	Antares	E.	98 30 28	2236	96 42 54	2223	94 55 0	2208	93 6 45	2195

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
23	SUN W.	123 10 8	2504	124 51 16	2492	126 32 41	2479	128 14 24	2467
	Aldebaran W.	88 36 4	2256	90 23 9	2243	92 10 33	2231	93 58 15	2219
	Pollux W.	45 39 17	2196	47 27 50	2183	49 16 43	2170	51 5 56	2157
	JUPITER W.	36 34 28	2215	38 22 33	2202	40 10 58	2188	41 59 43	2176
	Spica E.	45 26 22	2186	43 37 34	2174	41 48 28	2163	39 59 4	2151
	SATURN E.	69 47 31	2202	67 59 7	2191	66 10 26	2180	64 21 28	2170
	Antares E.	91 18 10	2182	89 29 16	2169	87 40 2	2157	85 50 29	2145
24	Pollux W.	60 16 36	2101	62 7 34	2091	63 58 47	2082	65 50 14	2073
	JUPITER W.	51 7 53	2121	52 58 20	2112	54 49 1	2103	56 39 56	2094
	Regulus W.	23 17 51	2091	25 9 4	2081	27 0 32	2073	28 52 13	2064
	SATURN E.	55 12 58	2126	53 22 38	2119	51 32 8	2113	49 41 29	2108
	Antares E.	76 38 24	2091	74 47 11	2081	72 55 43	2073	71 4 2	2064
25	Pollux W.	75 10 31	2040	77 3 3	2035	78 55 43	2031	80 48 29	2027
	JUPITER W.	65 57 29	2061	67 49 28	2057	69 41 34	2052	71 33 47	2049
	Regulus W.	38 13 36	2032	40 6 21	2026	41 59 14	2023	43 52 13	2019
	SATURN E.	40 26 57	2103	38 36 2	2105	36 45 11	2111	34 54 28	2117
	Antares E.	61 42 41	2032	59 49 56	2027	57 57 4	2023	56 4 5	2019
	α Aquilæ E.	112 7 41	2072	110 34 46	2046	109 1 18	2024	107 27 21	2004
26	Pollux W.	90 13 19	2021	92 6 21	2022	93 59 21	2024	95 52 18	2026
	JUPITER W.	80 55 47	2043	82 48 14	2044	84 40 40	2046	86 33 3	2048
	Regulus W.	53 18 3	2013	55 11 17	2014	57 4 29	2016	58 57 39	2018
	Antares E.	46 38 16	2014	44 45 3	2014	42 51 51	2016	40 58 42	2019
	α Aquilæ E.	99 32 10	2741	97 56 24	2735	96 20 30	2731	94 44 31	2730
27	Pollux W.	105 15 45	2050	107 8 2	2056	109 0 9	2064	110 52 4	2072
	JUPITER W.	95 53 37	2072	97 45 20	2078	99 36 53	2086	101 28 14	2094
	Regulus W.	68 22 9	2041	70 14 39	2048	72 6 59	2055	73 59 8	2063
	α Aquilæ E.	86 45 1	2752	85 9 30	2763	83 34 13	2775	81 59 13	2790
	Fomalhaut E.	112 2 1	2392	110 18 15	2391	108 34 27	2391	106 50 39	2392
28	JUPITER W.	110 41 28	2123	112 31 18	2157	114 20 50	2170	116 10 2	2183
	Regulus W.	83 16 24	2113	85 7 3	2123	86 57 24	2137	88 47 26	2150
	Spica W.	29 17 4	2122	31 7 29	2134	32 57 37	2145	34 47 27	2157
	α Aquilæ E.	74 9 52	2095	72 37 27	2023	71 5 37	2053	69 34 25	2085
	Fomalhaut E.	98 12 53	2422	96 29 49	2431	94 46 58	2442	93 4 23	2453
	MARS E.	110 39 42	2346	108 54 49	2358	107 10 14	2371	105 25 58	2385
29	Regulus W.	97 52 27	2223	99 40 21	2239	101 27 51	2255	103 14 57	2271
	Spica W.	43 51 44	2227	45 39 31	2243	47 26 55	2259	49 13 55	2275
	α Aquilæ E.	62 9 40	2191	60 43 20	2241	59 17 59	2259	57 53 42	2333
	Fomalhaut E.	84 36 10	2330	82 55 38	2348	81 15 32	2367	79 35 52	2387
	MARS E.	96 49 47	2461	95 7 39	2478	93 25 55	2495	91 44 35	2512
	α Pegasi E.	106 32 20	2447	104 49 52	2458	103 7 40	2471	101 25 46	2485
30	Spica W.	58 2 47	2362	59 47 17	2379	61 31 22	2397	63 15 1	2415
	SATURN W.	35 2 6	2443	36 44 40	2453	38 27 0	2463	40 9 5	2475
	Fomalhaut E.	71 24 48	2702	69 48 11	2728	68 12 8	2753	66 36 41	2782
	MARS E.	83 24 7	2604	81 45 18	2624	80 6 56	2643	78 28 59	2663
	α Pegasi E.	93 1 27	2564	91 21 43	2583	89 42 24	2600	88 3 29	2619

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	SUN W.	• • "		• • "		• • "		• • "	
	Aldebaran W.	129 56 23	2456	131 38 38	2445	133 21 8	2435	135 3 53	2426
	Pollux W.	95 46 14	2208	97 34 30	2197	99 23 2	2187	101 11 49	2178
	JUPITER W.	52 55 28	2145	54 45 18	2133	56 35 27	2122	58 25 53	2111
	Spica E.	43 48 46	2165	45 38 7	2153	47 27 46	2141	49 17 42	2132
	SATURN E.	38 9 22	2139	36 19 23	2129	34 29 8	2118	32 38 37	2109
	Antares E.	62 32 15	2159	60 42 46	2150	58 53 3	2141	57 3 7	2133
		84 0 38	2134	82 10 30	2122	80 20 4	2111	78 29 22	2101
24	Pollux W.	67 41 55	2065	69 33 48	2058	71 25 52	2051	73 18 7	2045
	JUPITER W.	58 31 5	2086	60 22 26	2079	62 13 57	2073	64 5 38	2066
	Regulus W.	30 44 7	2057	32 36 13	2049	34 28 31	2042	36 20 59	2037
	SATURN E.	47 50 42	2104	45 59 49	2102	44 8 53	2101	42 17 55	2101
	Antares E.	69 12 8	2057	67 20 2	2050	65 27 45	2043	63 35 18	2037
25	Pollux W.	82 41 21	2025	84 34 17	2023	86 27 16	2021	88 20 17	2021
	JUPITER W.	73 26 5	2046	75 18 27	2044	77 10 52	2043	79 3 19	2042
	Regulus W.	45 45 17	2017	47 38 25	2015	49 31 36	2014	51 24 49	2013
	SATURN E.	33 3 55	2127	31 13 37	2121	29 23 40	2119	27 34 10	2118
	Antares E.	54 11 1	2017	52 17 53	2015	50 24 42	2014	48 31 29	2014
	α Aquilæ E.	105 52 58	2786	104 18 12	2772	102 43 7	2759	101 7 45	2749
26	Pollux W.	97 45 12	2029	99 38 1	2033	101 30 43	2038	103 23 18	2043
	JUPITER W.	88 25 22	2052	90 17 36	2055	92 9 44	2060	94 1 45	2066
	Regulus W.	60 50 45	2021	62 43 46	2023	64 36 41	2030	66 29 29	2035
	Antares E.	39 5 37	2021	37 12 36	2026	35 19 42	2030	33 26 55	2033
	α Aquilæ E.	93 8 31	2730	91 32 31	2732	89 56 34	2737	88 20 43	2744
27	Pollux W.	112 43 46	2081	114 35 14	2091	116 26 27	2101	118 17 24	2112
	JUPITER W.	103 19 22	2105	105 10 16	2113	107 0 56	2123	108 51 20	2134
	Regulus W.	75 51 4	2072	77 42 47	2081	79 34 15	2091	81 25 28	2102
	α Aquilæ E.	80 24 32	2807	78 50 13	2825	77 16 18	2846	75 42 50	2869
	Fomalhaut E.	105 6 53	2395	103 23 11	2400	101 39 36	2405	99 56 9	2413
28	JUPITER W.	117 58 55	2197	119 47 27	2211	121 35 38	2226	123 23 27	2241
	Regulus W.	90 37 9	2164	92 26 31	2178	94 15 32	2192	96 4 11	2208
	Spica W.	36 36 59	2170	38 26 11	2184	40 15 3	2198	42 3 34	2212
	α Aquilæ E.	68 3 54	3021	66 34 7	3039	65 5 7	3100	63 36 57	3143
	Fomalhaut E.	91 22 4	2467	89 40 4	2481	87 58 24	2497	86 17 6	2512
	MARS E.	103 42 2	2399	101 58 26	2414	100 15 11	2429	98 32 18	2445
29	Regulus W.	105 1 39	2287	106 47 57	2305	108 33 49	2322	110 19 16	2340
	Spica W.	51 0 31	2292	52 46 42	2309	54 32 29	2326	56 17 51	2344
	α Aquilæ E.	56 30 32	3416	55 8 34	3483	53 47 51	3555	52 28 28	3634
	Fomalhaut E.	77 56 39	2608	76 17 55	2630	74 39 41	2653	73 1 58	2678
	MARS E.	90 3 39	2530	88 23 8	2548	86 43 2	2567	85 3 22	2585
	α Pegasi E.	99 44 12	2499	98 2 58	2515	96 22 5	2530	94 41 34	2548
30	Spica W.	64 58 14	2433	66 41 1	2451	68 23 22	2470	70 5 17	2489
	SATURN W.	41 50 53	2488	43 32 23	2501	45 13 35	2515	46 54 27	2530
	Fomalhaut E.	65 1 50	2811	63 27 37	2842	61 54 4	2873	60 21 11	2905
	MARS E.	76 51 29	2682	75 14 25	2702	73 37 48	2722	72 1 37	2741
	α Pegasi E.	86 25 0	2658	84 46 57	2657	83 9 20	2678	81 32 10	2698

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
Frid.	1	2 36 32.54	9.556	N.15 18 52.4	+44.88	15 54.12	66.13	3 5.58	0.299
Sat.	2	2 40 22.18	9.580	15 36 41.9	44.24	15 53.88	66.21	3 12.48	0.276
SUN.	3	2 44 12.38	9.604	15 54 16.0	43.60	15 53.64	66.29	3 18.82	0.252
Mon.	4	2 48 3.15	9.628	16 11 34.5	+42.94	15 53.41	66.37	3 24.59	0.228
Tues.	5	2 51 54.50	9.652	16 28 37.0	42.27	15 53.17	66.45	3 29.78	0.204
Wed.	6	2 55 46.44	9.676	16 45 23.2	41.58	15 52.94	66.53	3 34.38	0.180
Thur.	7	2 59 38.97	9.701	17 1 52.7	+40.88	15 52.72	66.61	3 38.40	0.156
Frid.	8	3 3 32.09	9.726	17 18 5.3	40.17	15 52.49	66.69	3 41.83	0.131
Sat.	9	3 7 25.79	9.750	17 34 0.7	39.44	15 52.27	66.77	3 44.67	0.106
SUN.	10	3 11 20.08	9.775	17 49 38.4	+38.70	15 52.06	66.85	3 46.93	0.082
Mon.	11	3 15 14.97	9.799	18 4 58.3	37.95	15 51.85	66.94	3 48.60	0.058
Tues.	12	3 19 10.43	9.823	18 20 0.0	37.19	15 51.64	67.02	3 49.70	0.034
Wed.	13	3 23 6.46	9.847	18 34 43.1	+36.41	15 51.44	67.10	3 50.21	0.010
Thur.	14	3 27 3.07	9.871	18 49 7.4	35.62	15 51.24	67.18	3 50.16	0.014
Frid.	15	3 31 0.24	9.894	19 3 12.7	34.81	15 51.05	67.26	3 49.55	0.037
Sat.	16	3 34 57.97	9.917	19 16 58.6	+34.00	15 50.86	67.34	3 48.38	0.060
SUN.	17	3 38 56.25	9.940	19 30 24.8	33.18	15 50.67	67.42	3 46.66	0.083
Mon.	18	3 42 55.07	9.962	19 43 31.0	32.35	15 50.49	67.50	3 44.41	0.105
Tues.	19	3 46 54.43	9.984	19 56 17.2	+31.50	15 50.32	67.58	3 41.62	0.127
Wed.	20	3 50 54.31	10.006	20 8 42.8	30.64	15 50.14	67.66	3 38.30	0.149
Thur.	21	3 54 54.72	10.028	20 20 47.8	29.77	15 49.97	67.73	3 34.46	0.171
Frid.	22	3 58 55.63	10.049	20 32 32.0	+28.89	15 49.81	67.80	3 30.12	0.192
Sat.	23	4 2 57.05	10.070	20 43 55.0	28.01	15 49.64	67.88	3 25.26	0.213
SUN.	24	4 6 58.98	10.091	20 54 56.6	27.12	15 49.48	67.95	3 19.92	0.233
Mon.	25	4 11 1.39	10.111	21 5 36.7	+26.22	15 49.32	68.02	3 14.08	0.253
Tues.	26	4 15 4.28	10.131	21 15 55.1	25.31	15 49.16	68.09	3 7.76	0.273
Wed.	27	4 19 7.65	10.150	21 25 51.4	24.39	15 49.01	68.15	3 0.97	0.293
Thur.	28	4 23 11.49	10.169	21 35 25.6	+23.46	15 48.86	68.22	2 53.71	0.312
Frid.	29	4 27 15.78	10.188	21 44 37.5	22.52	15 48.71	68.28	2 45.99	0.331
Sat.	30	4 31 20.52	10.207	21 53 26.8	21.58	15 48.56	68.34	2 37.83	0.349
SUN.	31	4 35 25.70	10.225	22 1 53.3	20.63	15 48.42	68.40	2 29.23	0.367
Mon.	32	4 39 31.30	10.242	N.22 9 56.9	+19.67	15 48.28	68.45	2 20.22	0.384

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Frid.	1	2 36 33.04	9.557	N.15 18 54.7	+44.88	3 5.59	0.299	2 39 38.63
Sat.	2	2 40 22.69	9.580	15 36 44.3	44.24	3 12.50	0.276	2 43 35.19
SUN.	3	2 44 12.91	9.604	15 54 18.4	43.60	3 18.84	0.252	2 47 31.74
Mon.	4	2 48 3.70	9.628	16 11 37.0	+42.94	3 24.60	0.228	2 51 28.30
Tues.	5	2 51 55.06	9.652	16 28 39.5	42.26	3 29.79	0.204	2 55 24.86
Wed.	6	2 55 47.02	9.676	16 45 25.6	41.58	3 34.39	0.180	2 59 21.41
Thur.	7	2 59 39.56	9.701	17 1 55.2	+40.88	3 38.41	0.155	3 3 17.97
Frid.	8	3 3 32.68	9.726	17 18 7.8	40.17	3 41.84	0.131	3 7 14.52
Sat.	9	3 7 26.40	9.750	17 34 3.2	39.44	3 44.68	0.106	3 11 11.08
SUN.	10	3 11 20.70	9.775	17 49 40.9	+38.70	3 46.94	0.082	3 15 7.64
Mon.	11	3 15 15.59	9.799	18 5 0.8	37.95	3 48.61	0.058	3 19 4.19
Tues.	12	3 19 11.05	9.823	18 20 2.4	37.18	3 49.70	0.034	3 23 0.75
Wed.	13	3 23 7.09	9.847	18 34 45.5	+36.40	3 50.22	0.010	3 26 57.31
Thur.	14	3 27 3.70	9.871	18 49 9.8	35.61	3 50.16	0.014	3 30 53.86
Frid.	15	3 31 0.87	9.894	19 3 15.0	34.81	3 49.55	0.037	3 34 50.42
Sat.	16	3 34 58.60	9.917	19 17 0.8	+34.00	3 48.38	0.060	3 38 46.98
SUN.	17	3 38 56.88	9.939	19 30 26.9	33.18	3 46.66	0.083	3 42 43.54
Mon.	18	3 42 55.69	9.962	19 43 33.1	32.34	3 44.40	0.105	3 46 40.09
Tues.	19	3 46 55.04	9.984	19 56 19.1	+31.49	3 41.61	0.127	3 50 36.65
Wed.	20	3 50 54.92	10.006	20 8 44.7	30.64	3 38.29	0.149	3 54 33.21
Thur.	21	3 54 55.31	10.027	20 20 49.7	29.77	3 34.45	0.171	3 58 29.77
Frid.	22	3 58 56.22	10.048	20 32 33.7	+28.89	3 30.11	0.192	4 2 26.32
Sat.	23	4 2 57.63	10.069	20 43 56.6	28.01	3 25.25	0.213	4 6 22.88
SUN.	24	4 6 59.54	10.090	20 54 58.2	27.12	3 19.90	0.233	4 10 19.44
Mon.	25	4 11 1.93	10.110	21 5 38.2	+26.21	3 14.06	0.253	4 14 16.00
Tues.	26	4 15 4.81	10.130	21 15 56.4	25.30	3 7.74	0.273	4 18 12.55
Wed.	27	4 19 8.16	10.149	21 25 52.7	24.38	3 0.95	0.293	4 22 9.11
Thur.	28	4 23 11.98	10.168	21 35 26.8	+23.46	2 53.69	0.312	4 26 5.67
Frid.	29	4 27 16.25	10.187	21 44 38.5	22.52	2 45.97	0.331	4 30 2.23
Sat.	30	4 31 20.97	10.206	21 53 27.7	21.58	2 37.81	0.349	4 33 58.79
SUN.	31	4 35 26.13	10.224	22 1 54.2	20.62	2 29.22	0.367	4 37 55.34
Mon.	32	4 39 31.70	10.241	N.22 9 57.7	+19.66	2 20.20	0.384	4 41 51.90

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour,
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	122	41 34 50.5	34 26.6	145.37	— 0.63	0.0035738	+45.5	21 16 51.61
2	123	42 32 58.6	32 34.6	145.31	0.56	0.0036827	45.1	21 12 55.70
3	124	43 31 5.3	30 41.1	145.25	0.46	0.0037906	44.7	21 8 59.79
4	125	44 29 10.4	28 46.1	145.19	— 0.34	0.0038976	+44.3	21 5 3.88
5	126	45 27 14.2	26 49.7	145.13	0.21	0.0040035	43.9	21 1 7.97
6	127	46 25 16.8	24 52.1	145.08	— 0.07	0.0041082	43.3	20 57 12.06
7	128	47 23 17.9	22 53.1	145.03	+ 0.07	0.0042113	+42.6	20 53 16.15
8	129	48 21 17.7	20 52.7	144.97	0.19	0.0043130	42.0	20 49 20.24
9	130	49 19 16.2	18 51.1	144.91	0.30	0.0044130	41.3	20 45 24.33
10	131	50 17 13.2	16 47.9	144.85	+ 0.38	0.0045111	+40.5	20 41 28.42
11	132	51 15 8.8	14 43.3	144.79	0.44	0.0046075	39.7	20 37 32.51
12	133	52 13 2.9	12 37.3	144.72	0.47	0.0047017	38.9	20 33 36.60
13	134	53 10 55.5	10 29.7	144.66	+ 0.47	0.0047939	+38.0	20 29 40.69
14	135	54 8 46.6	8 20.7	144.60	0.44	0.0048842	37.2	20 25 44.78
15	136	55 6 36.2	6 10.1	144.53	0.39	0.0049726	36.4	20 21 48.86
16	137	56 4 24.1	3 57.8	144.46	+ 0.30	0.0050588	+35.6	20 17 52.95
17	138	57 2 10.5	1 44.1	144.40	0.19	0.0051433	34.8	20 13 57.04
18	139	57 59 55.2	59 28.6	144.33	+ 0.07	0.0052259	34.1	20 10 1.13
19	140	58 57 38.2	57 11.5	144.26	— 0.06	0.0053069	+33.4	20 6 5.22
20	141	59 55 19.7	54 52.8	144.20	0.19	0.0053862	32.7	20 2 9.31
21	142	60 52 59.6	52 32.5	144.14	0.32	0.0054641	32.1	19 58 13.40
22	143	61 50 38.0	50 10.7	144.07	— 0.43	0.0055405	+31.6	19 54 17.48
23	144	62 48 14.9	47 47.5	144.01	0.53	0.0056157	31.1	19 50 21.57
24	145	63 45 50.4	45 22.8	143.95	0.61	0.0056897	30.6	19 46 25.66
25	146	64 43 24.5	42 56.7	143.90	— 0.66	0.0057624	+30.1	19 42 29.75
26	147	65 40 57.4	40 29.4	143.85	0.68	0.0058341	29.6	19 38 33.84
27	148	66 38 29.1	38 0.9	143.80	0.65	0.0059048	29.2	19 34 37.93
28	149	67 35 59.7	35 31.4	143.75	— 0.61	0.0059742	+28.7	19 30 42.01
29	150	68 33 29.3	33 0.8	143.71	0.54	0.0060426	28.2	19 26 46.10
30	151	69 30 58.0	30 29.3	143.68	0.45	0.0061097	27.7	19 22 50.19
31	152	70 28 25.8	27 56.9	143.64	0.32	0.0061756	27.1	19 18 54.28
32	153	71 25 52.9	25 23.8	143.61	— 0.20	0.0062400	+26.5	19 14 58.36
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st .								
Diff. for 1 Hour, —9 ^h .8296. (Table II.)								

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	15 47.6	15 40.0	57 51.3	-2.35	57 23.3	-2.30	16 17.3	2.35	18.3
2	15 32.6	15 25.5	56 56.0	2.23	56 29.9	2.11	17 11.3	2.15	19.3
3	15 18.8	15 12.7	56 5.4	1.96	55 42.8	1.80	18 0.5	1.95	20.3
4	15 7.1	15 2.1	55 22.3	-1.62	55 4.0	-1.43	18 45.4	1.80	21.3
5	14 57.8	14 54.1	54 48.1	1.22	54 34.7	1.02	19 27.2	1.69	22.3
6	14 51.1	14 48.8	54 23.7	0.81	54 15.2	0.61	20 6.9	1.63	23.3
7	14 47.1	14 46.1	54 9.0	-0.42	54 5.1	-0.23	20 45.8	1.62	24.3
8	14 45.6	14 45.7	54 3.4	-0.05	54 3.8	+0.11	21 25.0	1.65	25.3
9	14 46.3	14 47.4	54 6.1	+0.26	54 10.1	0.40	22 5.5	1.73	26.3
10	14 49.0	14 50.9	54 15.8	+0.53	54 22.9	+0.65	22 48.5	1.85	27.3
11	14 53.2	14 55.8	54 31.3	0.75	54 40.9	0.85	23 34.6	2.00	28.3
12	14 58.7	15 1.8	54 51.6	0.93	55 3.1	0.99	6		29.3
13	15 5.2	15 8.7	55 15.4	+1.05	55 28.4	+1.11	0 24.4	2.15	0.7
14	15 12.5	15 16.3	55 42.1	1.16	55 56.3	1.20	1 17.5	2.27	1.7
15	15 20.3	15 24.5	56 11.0	1.25	56 26.2	1.29	2 13.0	2.34	2.7
16	15 28.8	15 33.1	56 41.9	+1.32	56 57.9	+1.35	3 9.2	2.33	3.7
17	15 37.6	15 42.2	57 14.4	1.39	57 31.2	1.41	4 4.5	2.26	4.7
18	15 46.8	15 51.5	57 48.3	1.43	58 5.5	1.43	4 57.7	2.17	5.7
19	15 56.2	16 0.9	58 22.7	+1.43	58 39.8	+1.41	5 48.5	2.08	6.7
20	16 5.4	16 9.8	58 56.5	1.36	59 12.5	1.29	6 37.6	2.02	7.7
21	16 13.9	16 17.6	59 27.5	1.20	59 41.2	1.07	7 25.9	2.01	8.7
22	16 20.8	16 23.5	59 53.2	+0.91	60 3.1	+0.72	8 14.7	2.07	9.7
23	16 25.5	16 26.8	60 10.5	+0.50	60 15.1	+0.25	9 5.5	2.17	10.7
24	16 27.2	16 26.7	60 16.6	-0.02	60 14.7	-0.30	9 59.4	2.32	11.7
25	16 25.2	16 22.9	60 9.4	-0.59	60 0.6	-0.87	10 57.1	2.48	12.7
26	16 19.6	16 15.4	59 48.5	1.14	59 33.3	1.38	11 58.1	2.59	13.7
27	16 10.5	16 5.0	59 15.3	1.60	58 54.9	1.78	13 0.5	2.59	14.7
28	15 58.9	15 52.4	58 32.5	-1.92	58 8.8	-2.01	14 1.6	2.48	15.7
29	15 45.7	15 38.9	57 44.2	2.06	57 19.3	2.07	14 59.0	2.29	16.7
30	15 32.2	15 25.6	56 54.5	2.04	56 30.4	1.96	15 51.4	2.08	17.7
31	15 19.4	15 13.5	56 7.4	1.86	55 45.8	1.73	16 39.0	1.89	18.7
32	15 8.1	15 3.3	55 26.0	-1.56	55 8.3	-1.39	17 22.7	1.75	19.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 1.					SUNDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	18 19 15.43	2.5321	S. 27 36 1.4	2.771	0	20 12 49.12	2.1858	S. 22 34 12.2	9.243
1	18 21 47.18	2.5263	27 33 10.1	2.939	1	20 15 0.04	2.1783	22 24 54.6	9.342
2	18 24 18.58	2.5204	27 30 8.7	3.107	2	20 17 10.52	2.1709	22 15 31.1	9.440
3	18 26 49.63	2.5144	27 26 57.2	3.273	3	20 19 20.55	2.1634	22 6 1.8	9.536
4	18 29 20.31	2.5082	27 23 35.9	3.437	4	20 21 30.13	2.1560	21 56 26.8	9.631
5	18 31 50.62	2.5020	27 20 4.8	3.599	5	20 23 39.27	2.1487	21 46 46.1	9.725
6	18 34 20.55	2.4957	27 16 24.0	3.761	6	20 25 47.97	2.1413	21 36 59.8	9.817
7	18 36 50.10	2.4893	27 12 33.5	3.922	7	20 27 56.23	2.1340	21 27 8.0	9.908
8	18 39 19.26	2.4828	27 8 33.4	4.080	8	20 30 4.05	2.1267	21 17 10.8	9.998
9	18 41 48.03	2.4765	27 4 23.9	4.237	9	20 32 11.44	2.1195	21 7 8.3	10.086
10	18 44 16.41	2.4696	27 0 5.0	4.393	10	20 34 18.39	2.1123	20 57 0.5	10.178
11	18 46 44.38	2.4628	26 55 36.7	4.549	11	20 36 24.92	2.1052	20 46 47.6	10.257
12	18 49 11.94	2.4559	26 50 59.1	4.702	12	20 38 31.02	2.0981	20 36 29.6	10.342
13	18 51 39.09	2.4490	26 46 12.4	4.854	13	20 40 36.69	2.0911	20 26 6.6	10.425
14	18 54 5.82	2.4421	26 41 16.6	5.005	14	20 42 41.95	2.0842	20 15 38.6	10.507
15	18 56 32.14	2.4351	26 36 11.8	5.154	15	20 44 46.79	2.0772	20 5 5.8	10.587
16	18 58 58.03	2.4279	26 30 58.1	5.302	16	20 46 51.21	2.0704	19 54 28.2	10.667
17	19 1 23.49	2.4207	26 25 35.6	5.448	17	20 48 55.23	2.0636	19 43 45.8	10.745
18	19 3 48.52	2.4135	26 20 4.4	5.592	18	20 50 58.84	2.0568	19 32 58.8	10.821
19	19 6 13.11	2.4063	26 14 24.6	5.735	19	20 53 2.04	2.0500	19 22 7.3	10.896
20	19 8 37.27	2.3990	26 8 36.2	5.877	20	20 55 4.84	2.0433	19 11 11.3	10.971
21	19 11 0.99	2.3916	26 2 39.3	6.018	21	20 57 7.24	2.0367	19 0 10.8	11.044
22	19 13 24.26	2.3841	25 56 34.0	6.157	22	20 59 9.25	2.0302	18 49 6.0	11.116
23	19 15 47.08	2.3767	S. 25 50 20.5	6.293	23	21 1 10.87	2.0237	S. 18 37 56.9	11.187
SATURDAY 2.					MONDAY 4.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	19 18 9.46	2.3692	S. 25 43 58.8	6.429	0	21 3 12.10	2.0175	S. 18 26 43.6	11.256
1	19 20 31.39	2.3617	25 37 29.0	6.563	1	21 5 12.95	2.0110	18 15 26.2	11.324
2	19 22 52.86	2.3541	25 30 51.2	6.697	2	21 7 13.42	2.0047	18 4 4.7	11.392
3	19 25 13.88	2.3465	25 24 5.4	6.828	3	21 9 13.51	1.9984	17 52 39.2	11.458
4	19 27 34.44	2.3389	25 17 11.8	6.957	4	21 11 13.23	1.9923	17 41 9.8	11.523
5	19 29 54.55	2.3313	25 10 10.5	7.086	5	21 13 12.59	1.9862	17 29 36.5	11.587
6	19 32 14.20	2.3237	25 3 1.5	7.213	6	21 15 11.58	1.9802	17 17 59.4	11.649
7	19 34 33.39	2.3160	24 55 44.9	7.338	7	21 17 10.21	1.9743	17 6 18.6	11.711
8	19 36 52.12	2.3083	24 48 20.9	7.462	8	21 19 8.49	1.9684	16 54 34.1	11.772
9	19 39 10.39	2.3007	24 40 49.5	7.584	9	21 21 6.42	1.9626	16 42 46.0	11.831
10	19 41 28.20	2.2930	24 33 10.8	7.705	10	21 23 4.00	1.9568	16 30 54.4	11.889
11	19 43 45.55	2.2852	24 25 24.9	7.825	11	21 25 1.24	1.9511	16 18 59.3	11.947
12	19 46 2.43	2.2775	24 17 31.8	7.943	12	21 26 58.13	1.9454	16 7 0.8	12.003
13	19 48 18.85	2.2698	24 9 31.7	8.059	13	21 28 54.69	1.9399	15 54 58.9	12.058
14	19 50 34.81	2.2622	24 1 24.7	8.174	14	21 30 50.92	1.9345	15 42 53.8	12.112
15	19 52 50.31	2.2545	23 53 10.8	8.287	15	21 32 46.83	1.9291	15 30 45.5	12.165
16	19 55 5.35	2.2467	23 44 50.2	8.399	16	21 34 42.41	1.9238	15 18 34.0	12.218
17	19 57 19.92	2.2390	23 36 22.9	8.510	17	21 36 37.68	1.9185	15 6 19.3	12.270
18	19 59 34.03	2.2313	23 27 49.0	8.619	18	21 38 32.63	1.9133	14 54 1.6	12.320
19	20 1 47.68	2.2237	23 19 8.6	8.727	19	21 40 27.27	1.9082	14 41 40.9	12.369
20	20 4 0.88	2.2162	23 10 21.8	8.833	20	21 42 21.61	1.9032	14 29 17.3	12.417
21	20 6 13.62	2.2086	23 1 28.7	8.938	21	21 44 15.65	1.8982	14 16 50.8	12.465
22	20 8 25.91	2.2010	22 52 29.3	9.041	22	21 46 9.39	1.8934	14 4 21.5	12.512
23	20 10 37.74	2.1934	22 43 23.8	9.143	23	21 48 2.85	1.8886	13 51 49.4	12.557
24	20 12 49.12	2.1858	S. 22 34 12.2	9.243	24	21 49 56.02	1.8838	S. 13 39 14.6	12.602

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 5.					THURSDAY 7.				
0	21 49 56.02	1.8838	S. 13 39 14.6	12.602	0	23 16 20.77	1.7462	S. 2 58 39.5	13.799
1	21 51 48.90	1.8790	13 26 37.2	12.645	1	23 18 5.51	1.7452	2 44 51.3	13.807
2	21 53 41.50	1.8745	13 13 57.2	12.688	2	23 19 50.20	1.7443	2 31 2.7	13.813
3	21 55 33.84	1.8701	13 1 14.6	12.731	3	23 21 34.83	1.7434	2 17 13.7	13.819
4	21 57 25.91	1.8656	12 48 29.5	12.772	4	23 23 19.41	1.7427	2 3 24.4	13.824
5	21 59 17.71	1.8612	12 35 42.0	12.812	5	23 25 3.95	1.7420	1 49 34.8	13.829
6	22 1 9.25	1.8568	12 22 52.1	12.851	6	23 26 48.45	1.7414	1 35 44.9	13.833
7	22 3 0.53	1.8527	12 9 59.9	12.889	7	23 28 32.92	1.7408	1 21 54.8	13.836
8	22 4 51.57	1.8486	11 57 5.4	12.927	8	23 30 17.35	1.7403	1 8 4.5	13.839
9	22 6 42.36	1.8445	11 44 8.7	12.965	9	23 32 1.75	1.7399	0 54 14.1	13.842
10	22 8 32.91	1.8406	11 31 9.8	12.999	10	23 33 46.13	1.7396	0 40 23.5	13.843
11	22 10 23.23	1.8367	11 18 8.8	13.034	11	23 35 30.50	1.7393	0 26 32.9	13.843
12	22 12 13.31	1.8328	11 5 5.7	13.069	12	23 37 14.85	1.7391	S. 0 12 42.3	13.843
13	22 14 3.16	1.8290	10 52 0.5	13.102	13	23 38 59.19	1.7390	N. 0 1 8.3	13.843
14	22 15 52.79	1.8254	10 38 53.4	13.134	14	23 40 43.53	1.7390	0 14 58.8	13.842
15	22 17 42.21	1.8218	10 25 44.4	13.166	15	23 42 27.87	1.7391	0 28 49.3	13.840
16	22 19 31.41	1.8182	10 12 33.5	13.197	16	23 44 12.22	1.7392	0 42 39.6	13.837
17	22 21 20.40	1.8148	9 59 20.8	13.227	17	23 45 56.57	1.7393	0 56 29.7	13.833
18	22 23 9.19	1.8115	9 46 6.2	13.257	18	23 47 40.93	1.7395	1 10 19.6	13.830
19	22 24 57.78	1.8082	9 32 49.9	13.286	19	23 49 25.31	1.7399	1 24 9.3	13.825
20	22 26 46.17	1.8049	9 19 31.9	13.313	20	23 51 9.72	1.7403	1 37 58.6	13.819
21	22 28 34.37	1.8018	9 6 12.3	13.340	21	23 52 54.15	1.7408	1 51 47.6	13.813
22	22 30 22.38	1.7988	8 52 51.1	13.367	22	23 54 38.61	1.7413	2 5 36.2	13.807
23	22 32 10.22	1.7958	S. 8 39 28.3	13.393	23	23 56 23.11	1.7420	N. 2 19 24.4	13.800
WEDNESDAY 6.					FRIDAY 8.				
0	22 33 57.88	1.7928	S. 8 26 3.9	13.418	0	23 58 7.05	1.7427	N. 2 33 12.2	13.792
1	22 35 45.36	1.7900	8 12 38.1	13.442	1	23 59 52.23	1.7434	2 46 59.4	13.783
2	22 37 32.68	1.7873	7 59 10.9	13.465	2	0 1 36.86	1.7442	3 0 46.1	13.773
3	22 39 19.84	1.7847	7 45 42.3	13.487	3	0 3 21.54	1.7451	3 14 32.2	13.763
4	22 41 6.84	1.7821	7 32 12.4	13.509	4	0 5 6.27	1.7461	3 28 17.7	13.752
5	22 42 53.69	1.7796	7 18 41.2	13.531	5	0 6 51.07	1.7472	3 42 2.5	13.741
6	22 44 40.39	1.7771	7 5 8.7	13.552	6	0 8 35.93	1.7483	3 55 46.6	13.729
7	22 46 26.94	1.7748	6 51 35.0	13.571	7	0 10 20.86	1.7495	4 9 30.0	13.716
8	22 48 13.36	1.7725	6 38 0.2	13.589	8	0 12 5.87	1.7507	4 23 12.5	13.702
9	22 49 59.64	1.7703	6 24 24.3	13.607	9	0 13 50.95	1.7521	4 36 54.2	13.688
10	22 51 45.79	1.7682	6 10 47.3	13.625	10	0 15 36.12	1.7535	4 50 35.0	13.673
11	22 53 31.82	1.7661	5 57 9.3	13.642	11	0 17 21.37	1.7549	5 4 14.9	13.658
12	22 55 17.72	1.7641	5 43 30.2	13.659	12	0 19 6.71	1.7564	5 17 53.9	13.642
13	22 57 3.51	1.7622	5 29 50.2	13.674	13	0 20 52.14	1.7581	5 31 31.9	13.624
14	22 58 49.19	1.7603	5 16 9.3	13.688	14	0 22 37.68	1.7598	5 45 8.8	13.606
15	23 0 34.75	1.7585	5 2 27.6	13.703	15	0 24 23.32	1.7615	5 58 44.6	13.587
16	23 2 20.21	1.7569	4 48 45.0	13.717	16	0 26 9.06	1.7633	6 12 19.2	13.568
17	23 4 5.58	1.7553	4 35 1.6	13.730	17	0 27 54.92	1.7652	6 25 52.7	13.548
18	23 5 50.85	1.7538	4 21 17.5	13.741	18	0 29 40.89	1.7672	6 39 25.0	13.527
19	23 7 36.03	1.7523	4 7 32.7	13.752	19	0 31 26.98	1.7692	6 52 56.0	13.506
20	23 9 21.13	1.7510	3 53 47.2	13.763	20	0 33 13.20	1.7713	7 6 25.7	13.484
21	23 11 6.15	1.7497	3 40 1.1	13.773	21	0 34 59.54	1.7734	7 19 54.1	13.462
22	23 12 51.10	1.7485	3 26 14.4	13.782	22	0 36 46.01	1.7757	7 33 21.1	13.438
23	23 14 35.97	1.7473	3 12 27.2	13.791	23	0 38 32.62	1.7780	7 46 46.6	13.413
24	23 16 20.77	1.7462	S. 2 58 39.5	13.799	24	0 40 19.37	1.7803	N. 8 0 10.6	13.388

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 9.					MONDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	40 19.37	1.7803	N. 8 0 10.6	13.388	0	2 9 42.61	1.9665	N. 17 57 55.9	11.172
1	42 6.26	1.7827	8 13 33.1	13.362	1	2 11 40.74	1.9715	18 9 4.1	11.102
2	43 53.30	1.7853	8 26 54.0	13.334	2	2 13 39.19	1.9767	18 20 8.1	11.032
3	45 40.50	1.7879	8 40 13.2	13.307	3	2 15 37.95	1.9819	18 31 7.9	10.961
4	47 27.85	1.7905	8 53 30.8	13.279	4	2 17 37.02	1.9872	18 42 3.4	10.887
5	49 15.36	1.7932	9 6 46.7	13.250	5	2 19 36.41	1.9925	18 52 54.4	10.812
6	51 3.03	1.7959	9 20 0.8	13.220	6	2 21 36.12	1.9978	19 3 40.9	10.737
7	52 50.87	1.7988	9 33 13.1	13.189	7	2 23 36.15	2.0032	19 14 22.9	10.662
8	54 38.89	1.8017	9 46 23.5	13.158	8	2 25 36.51	2.0087	19 25 0.4	10.586
9	56 27.08	1.8047	9 59 32.0	13.126	9	2 27 37.19	2.0141	19 35 33.2	10.507
10	58 15.45	1.8077	10 12 38.6	13.092	10	2 29 38.20	2.0196	19 46 1.2	10.427
11	1 0 4.00	1.8107	10 25 43.1	13.058	11	2 31 39.54	2.0251	19 56 24.5	10.347
12	1 1 52.74	1.8139	10 38 45.6	13.024	12	2 33 41.21	2.0307	20 6 42.9	10.266
13	1 3 41.67	1.8172	10 51 46.0	12.988	13	2 35 43.22	2.0362	20 16 56.4	10.183
14	1 5 30.80	1.8204	11 4 44.2	12.952	14	2 37 45.56	2.0417	20 27 4.9	10.100
15	1 7 20.12	1.8238	11 17 40.2	12.914	15	2 39 48.23	2.0473	20 37 8.4	10.016
16	1 9 9.65	1.8272	11 30 33.9	12.876	16	2 41 51.24	2.0530	20 47 6.8	9.932
17	1 10 59.39	1.8307	11 43 25.3	12.837	17	2 43 54.59	2.0587	20 56 59.9	9.842
18	1 12 49.33	1.8342	11 56 14.3	12.797	18	2 45 58.28	2.0643	21 6 47.8	9.754
19	1 14 39.49	1.8378	12 9 0.9	12.757	19	2 48 2.31	2.0700	21 16 30.4	9.665
20	1 16 29.87	1.8414	12 21 45.1	12.715	20	2 50 6.68	2.0757	21 26 7.6	9.574
21	1 18 20.46	1.8451	12 34 26.7	12.672	21	2 52 11.40	2.0815	21 35 39.3	9.482
22	1 20 11.28	1.8489	12 47 5.7	12.628	22	2 54 16.46	2.0873	21 45 5.5	9.390
23	1 22 2.33	1.8528	N. 12 59 42.1	12.585	23	2 56 21.87	2.0931	N. 21 54 26.1	9.296
SUNDAY 10.					TUESDAY 12.				
0	1 23 53.61	1.8567	N. 13 12 15.9	12.541	0	2 58 27.63	2.0988	N. 22 3 41.0	9.201
1	1 25 45.13	1.8607	13 24 47.0	12.494	1	3 0 33.73	2.1046	22 12 50.2	9.105
2	1 27 36.89	1.8646	13 37 15.2	12.447	2	3 2 40.18	2.1105	22 21 53.6	9.008
3	1 29 28.88	1.8686	13 49 40.6	12.399	3	3 4 46.97	2.1161	22 30 51.2	8.910
4	1 31 21.12	1.8726	14 2 3.1	12.350	4	3 6 54.11	2.1218	22 39 42.8	8.810
5	1 33 13.61	1.8770	14 14 22.6	12.300	5	3 9 1.59	2.1276	22 48 28.4	8.709
6	1 35 6.36	1.8812	14 26 39.1	12.249	6	3 11 9.42	2.1334	22 57 7.9	8.607
7	1 36 59.36	1.8855	14 38 52.5	12.198	7	3 13 17.60	2.1392	23 5 41.3	8.505
8	1 38 52.62	1.8899	14 51 2.8	12.146	8	3 15 26.12	2.1449	23 14 8.5	8.401
9	1 40 46.15	1.8943	15 3 10.0	12.092	9	3 17 34.99	2.1507	23 22 29.4	8.295
10	1 42 39.94	1.8987	15 15 13.9	12.037	10	3 19 44.21	2.1565	23 30 43.9	8.189
11	1 44 34.00	1.9032	15 27 14.5	11.982	11	3 21 53.77	2.1622	23 38 52.0	8.082
12	1 46 28.33	1.9076	15 39 11.8	11.927	12	3 24 3.68	2.1680	23 46 53.7	7.973
13	1 48 22.94	1.9123	15 51 5.7	11.869	13	3 26 13.93	2.1737	23 54 48.8	7.863
14	1 50 17.83	1.9171	16 2 56.1	11.810	14	3 28 24.52	2.1794	24 2 37.3	7.752
15	1 52 12.99	1.9218	16 14 42.9	11.750	15	3 30 35.46	2.1851	24 10 19.1	7.641
16	1 54 8.44	1.9266	16 26 26.1	11.690	16	3 32 46.74	2.1908	24 17 54.2	7.528
17	1 56 4.18	1.9313	16 38 5.7	11.630	17	3 34 58.36	2.1964	24 25 22.4	7.413
18	1 58 0.20	1.9361	16 49 41.7	11.568	18	3 37 10.31	2.2020	24 32 43.7	7.298
19	1 59 56.51	1.9411	17 1 13.9	11.504	19	3 39 22.60	2.2077	24 39 58.1	7.182
20	2 1 53.13	1.9462	17 12 42.2	11.439	20	3 41 35.23	2.2133	24 47 5.5	7.065
21	2 3 50.05	1.9512	17 24 6.6	11.373	21	3 43 48.19	2.2188	24 54 5.7	6.944
22	2 5 47.27	1.9562	17 35 27.0	11.307	22	3 46 1.49	2.2243	25 0 58.8	6.825
23	2 7 44.79	1.9612	17 46 43.5	11.241	23	3 48 15.11	2.2297	25 7 44.7	6.704
24	2 9 42.61	1.9663	N. 17 57 55.9	11.172	24	3 50 29.06	2.2352	N. 25 14 23.3	6.582

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension	Diff. for 1 Minute	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 13.					FRIDAY 15.				
0	3 50 29.06	2.2352	N.25 14 23.3	6.582	0	5 42 50.60	2.4135	N.27 51 53.4	0.311
1	3 52 43.33	2.2406	25 20 54.5	6.459	1	5 45 15.45	2.4148	27 51 30.0	0.469
2	3 54 57.93	2.2460	25 27 18.4	6.336	2	5 47 40.38	2.4161	27 50 57.1	0.627
3	3 57 12.85	2.2513	25 33 34.8	6.210	3	5 50 5.38	2.4172	27 50 14.7	0.786
4	3 59 28.09	2.2566	25 39 43.6	6.084	4	5 52 30.44	2.4182	27 49 22.8	0.945
5	4 1 43.64	2.2618	25 45 44.8	5.957	5	5 54 55.56	2.4191	27 48 21.3	1.104
6	4 3 59.50	2.2669	25 51 38.4	5.828	6	5 57 20.73	2.4198	27 47 10.3	1.263
7	4 6 15.67	2.2721	25 57 24.2	5.698	7	5 59 45.94	2.4204	27 45 49.7	1.422
8	4 8 32.15	2.2772	26 3 2.2	5.568	8	6 2 11.18	2.4209	27 44 19.6	1.582
9	4 10 48.93	2.2822	26 8 32.4	5.437	9	6 4 36.45	2.4213	27 42 39.9	1.742
10	4 13 6.01	2.2871	26 13 54.7	5.305	10	6 7 1.74	2.4217	27 40 50.6	1.902
11	4 15 23.38	2.2919	26 19 9.0	5.172	11	6 9 27.05	2.4219	27 38 51.7	2.061
12	4 17 41.04	2.2967	26 24 15.3	5.037	12	6 11 52.37	2.4220	27 36 43.3	2.220
13	4 19 58.99	2.3015	26 29 13.5	4.902	13	6 14 17.69	2.4219	27 34 25.3	2.380
14	4 22 17.22	2.3062	26 34 3.6	4.766	14	6 16 43.00	2.4217	27 31 57.7	2.539
15	4 24 35.74	2.3109	26 38 45.4	4.629	15	6 19 8.30	2.4215	27 29 20.6	2.698
16	4 26 54.53	2.3154	26 43 19.0	4.491	16	6 21 33.58	2.4211	27 26 33.9	2.857
17	4 29 13.59	2.3199	26 47 44.3	4.352	17	6 23 58.83	2.4207	27 23 37.7	3.017
18	4 31 32.92	2.3243	26 52 1.2	4.212	18	6 26 24.06	2.4202	27 20 31.9	3.176
19	4 33 52.51	2.3287	26 56 9.7	4.071	19	6 28 49.25	2.4194	27 17 16.6	3.335
20	4 36 12.36	2.3329	27 0 9.7	3.929	20	6 31 14.39	2.4186	27 13 51.7	3.494
21	4 38 32.46	2.3371	27 4 1.2	3.787	21	6 33 39.48	2.4177	27 10 17.3	3.652
22	4 40 52.81	2.3412	27 7 44.2	3.644	22	6 36 4.51	2.4167	27 6 33.4	3.810
23	4 43 13.40	2.3452	N.27 11 18.5	3.499	23	6 38 29.48	2.4156	N.27 2 40.1	3.967
THURSDAY 14.					SATURDAY 16.				
0	4 45 34.24	2.3492	N.27 14 44.1	3.354	0	6 40 54.38	2.4143	N.26 58 37.3	4.125
1	4 47 55.31	2.3530	27 18 1.0	3.209	1	6 43 19.20	2.4130	26 54 25.1	4.282
2	4 50 16.60	2.3567	27 21 9.2	3.063	2	6 45 43.94	2.4117	26 50 3.4	4.440
3	4 52 38.11	2.3603	27 24 8.6	2.916	3	6 48 8.60	2.4102	26 45 32.3	4.597
4	4 54 59.84	2.3639	27 26 59.1	2.768	4	6 50 33.16	2.4085	26 40 51.8	4.753
5	4 57 21.78	2.3674	27 29 40.7	2.619	5	6 52 57.62	2.4068	26 36 2.0	4.908
6	4 59 43.93	2.3708	27 32 13.4	2.470	6	6 55 21.98	2.4050	26 31 2.8	5.064
7	5 2 6.28	2.3741	27 34 37.1	2.320	7	6 57 46.22	2.4031	26 25 54.3	5.219
8	5 4 28.82	2.3772	27 36 51.8	2.169	8	7 0 10.35	2.4012	26 20 36.5	5.373
9	5 6 51.54	2.3802	27 38 57.4	2.017	9	7 2 34.36	2.3991	26 15 9.5	5.527
10	5 9 14.44	2.3832	27 40 53.9	1.866	10	7 4 58.24	2.3969	26 9 33.3	5.680
11	5 11 37.52	2.3861	27 42 41.3	1.714	11	7 7 21.99	2.3947	26 3 47.9	5.833
12	5 14 0.77	2.3888	27 44 19.6	1.561	12	7 9 45.61	2.3925	25 57 53.3	5.986
13	5 16 24.18	2.3915	27 45 48.7	1.407	13	7 12 9.09	2.3901	25 51 49.6	6.137
14	5 18 47.75	2.3941	27 47 8.5	1.253	14	7 14 32.42	2.3876	25 45 36.8	6.288
15	5 21 11.47	2.3965	27 48 19.1	1.099	15	7 16 55.60	2.3850	25 39 15.0	6.438
16	5 23 35.33	2.3988	27 49 20.4	0.944	16	7 19 18.62	2.3824	25 32 44.2	6.588
17	5 25 59.33	2.4011	27 50 12.4	0.788	17	7 21 41.48	2.3798	25 26 4.4	6.738
18	5 28 23.46	2.4032	27 50 55.0	0.633	18	7 24 4.19	2.3771	25 19 15.6	6.887
19	5 30 47.72	2.4052	27 51 28.3	0.477	19	7 26 26.73	2.3742	25 12 17.9	7.035
20	5 33 12.09	2.4071	27 51 52.2	0.320	20	7 28 49.09	2.3713	25 5 11.4	7.182
21	5 35 36.57	2.4088	27 52 6.7	0.162	21	7 31 11.28	2.3683	24 57 56.1	7.328
22	5 38 1.15	2.4105	27 52 11.7	+0.005	22	7 33 33.29	2.3653	24 50 32.0	7.474
23	5 40 25.83	2.4121	27 52 7.3	-0.153	23	7 35 55.12	2.3623	24 42 59.2	7.618
24	5 42 50.60	2.4135	N.27 51 53.4	0.311	24	7 38 16.77	2.3592	N.24 35 17.8	7.762

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 17.					TUESDAY 19.				
0	7 38 16.77	2.3592	N.24 35 17.8	7.762	0	9 27 25.10	2.1883	N.15 54 23.0	13.335
1	7 40 38.23	2.3560	24 27 27.7	7.906	1	9 29 36.30	2.1851	15 40 48.1	13.627
2	7 42 59.49	2.3528	24 19 29.0	8.049	2	9 31 47.31	2.1820	15 27 7.7	13.719
3	7 45 20.56	2.3495	24 11 21.8	8.191	3	9 33 58.14	2.1790	15 13 21.8	13.809
4	7 47 41.43	2.3462	24 3 6.1	8.332	4	9 36 8.79	2.1760	14 59 30.6	13.898
5	7 50 2.10	2.3428	23 54 42.0	8.472	5	9 38 19.26	2.1730	14 45 34.0	13.987
6	7 52 22.57	2.3394	23 46 9.5	8.611	6	9 40 29.55	2.1701	14 31 32.2	14.073
7	7 54 42.83	2.3360	23 37 28.7	8.749	7	9 42 39.67	2.1672	14 17 25.3	14.158
8	7 57 2.89	2.3326	23 28 39.6	8.887	8	9 44 49.62	2.1644	14 3 13.2	14.243
9	7 59 22.74	2.3291	23 19 42.3	9.023	9	9 46 59.40	2.1617	13 48 56.1	14.326
10	8 1 42.38	2.3255	23 10 36.8	9.159	10	9 49 9.02	2.1590	13 34 34.1	14.407
11	8 4 1.80	2.3218	23 1 23.2	9.293	11	9 51 18.48	2.1563	13 20 7.2	14.487
12	8 6 21.00	2.3182	22 52 1.6	9.427	12	9 53 27.78	2.1537	13 5 35.6	14.567
13	8 8 39.98	2.3146	22 42 32.0	9.560	13	9 55 36.93	2.1511	12 50 59.2	14.645
14	8 10 58.75	2.3110	22 32 54.4	9.692	14	9 57 45.93	2.1488	12 36 18.2	14.721
15	8 13 17.30	2.3073	22 23 8.9	9.823	15	9 59 54.79	2.1464	12 21 32.7	14.796
16	8 15 35.63	2.3037	22 13 15.6	9.952	16	10 2 3.50	2.1441	12 6 42.7	14.871
17	8 17 53.74	2.2999	22 3 14.6	10.081	17	10 4 12.08	2.1419	11 51 48.2	14.944
18	8 20 11.62	2.2962	21 53 5.9	10.209	18	10 6 20.53	2.1397	11 36 49.4	15.016
19	8 22 29.28	2.2925	21 42 49.5	10.337	19	10 8 28.85	2.1376	11 21 46.3	15.086
20	8 24 46.72	2.2887	21 32 25.5	10.462	20	10 10 37.04	2.1355	11 6 39.1	15.154
21	8 27 3.93	2.2849	21 21 54.1	10.586	21	10 12 45.11	2.1335	10 51 27.8	15.222
22	8 29 20.91	2.2812	21 11 15.2	10.710	22	10 14 53.06	2.1316	10 36 12.4	15.289
23	8 31 37.67	2.2774	N.21 0 28.9	10.833	23	10 17 0.90	2.1297	N.10 20 53.1	15.353
MONDAY 18.					WEDNESDAY 20.				
0	8 33 54.20	2.2736	N.20 49 35.2	10.955	0	10 19 8.63	2.1280	N.10 5 30.0	15.417
1	8 36 10.50	2.2698	20 38 34.3	11.075	1	10 21 16.26	2.1263	9 50 3.1	15.480
2	8 38 26.58	2.2662	20 27 26.2	11.195	2	10 23 23.79	2.1247	9 34 32.4	15.542
3	8 40 42.44	2.2624	20 16 10.9	11.313	3	10 25 31.22	2.1231	9 18 58.1	15.602
4	8 42 58.07	2.2587	20 4 48.6	11.430	4	10 27 38.56	2.1216	9 3 20.2	15.660
5	8 45 13.48	2.2549	19 53 19.3	11.546	5	10 29 45.82	2.1202	8 47 38.9	15.717
6	8 47 28.66	2.2512	19 41 43.1	11.661	6	10 31 52.99	2.1189	8 31 54.2	15.772
7	8 49 43.62	2.2475	19 30 0.0	11.775	7	10 34 0.08	2.1177	8 16 6.2	15.827
8	8 51 58.36	2.2437	19 18 10.1	11.888	8	10 36 7.11	2.1166	8 0 14.9	15.881
9	8 54 12.87	2.2400	19 6 13.4	12.000	9	10 38 14.07	2.1154	7 44 20.5	15.932
10	8 56 27.16	2.2364	18 54 10.1	12.110	10	10 40 20.96	2.1144	7 28 23.1	15.982
11	8 58 41.24	2.2329	18 42 0.2	12.219	11	10 42 27.79	2.1135	7 12 22.6	16.032
12	9 0 55.11	2.2293	18 29 43.8	12.327	12	10 44 34.58	2.1127	6 56 19.2	16.080
13	9 3 8.76	2.2257	18 17 21.0	12.434	13	10 46 41.32	2.1119	6 40 13.0	16.126
14	9 5 22.19	2.2220	18 4 51.7	12.541	14	10 48 48.01	2.1112	6 24 4.1	16.171
15	9 7 35.40	2.2184	17 52 16.1	12.645	15	10 50 54.66	2.1105	6 7 52.5	16.214
16	9 9 48.40	2.2150	17 39 34.3	12.748	16	10 53 1.27	2.1100	5 51 38.4	16.257
17	9 12 1.20	2.2116	17 26 46.3	12.851	17	10 55 7.86	2.1097	5 35 21.7	16.298
18	9 14 13.79	2.2082	17 13 52.1	12.953	18	10 57 14.43	2.1093	5 19 2.6	16.338
19	9 16 26.18	2.2047	17 0 51.9	13.053	19	10 59 20.98	2.1090	5 2 41.2	16.376
20	9 18 38.36	2.2013	16 47 45.7	13.151	20	11 1 27.51	2.1088	4 46 17.5	16.412
21	9 20 50.34	2.1980	16 34 33.7	13.248	21	11 3 34.04	2.1087	4 29 51.7	16.447
22	9 23 2.12	2.1947	16 21 15.9	13.345	22	11 5 40.56	2.1087	4 13 23.9	16.481
23	9 25 13.71	2.1915	16 7 52.3	13.441	23	11 7 47.08	2.1087	3 56 54.0	16.514
24	9 27 25.10	2.1883	N.15 54 23.0	13.535	24	11 9 53.61	2.1089	N. 3 40 22.2	16.545

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 21.					SATURDAY 23.				
0	11 9 53.61	2.1089	N. 3 40 22.2	16.545	0	12 52 59.16	2.2202	S. 9 40 28.2	16.196
1	11 12 0.15	2.1092	3 23 48.6	16.574	1	12 55 12.50	2.2246	9 56 38.5	16.148
2	11 14 6.71	2.1095	3 7 13.3	16.602	2	12 57 26.11	2.2291	10 12 45.9	16.098
3	11 16 13.29	2.1099	2 50 36.3	16.630	3	12 59 39.99	2.2336	10 28 50.2	16.044
4	11 18 19.90	2.1105	2 33 57.7	16.655	4	13 1 54.14	2.2382	10 44 51.2	15.989
5	11 20 26.55	2.1111	2 17 17.7	16.678	5	13 4 8.57	2.2428	11 0 48.9	15.933
6	11 22 33.23	2.1117	2 0 36.3	16.701	6	13 6 23.28	2.2476	11 16 43.2	15.875
7	11 24 39.95	2.1125	1 43 53.6	16.722	7	13 8 38.28	2.2524	11 32 33.9	15.815
8	11 26 46.73	2.1134	1 27 9.7	16.741	8	13 10 53.57	2.2573	11 48 21.0	15.753
9	11 28 53.56	2.1143	1 10 24.7	16.758	9	13 13 9.16	2.2622	12 4 4.3	15.689
10	11 31 0.45	2.1153	0 53 38.7	16.774	10	13 15 25.04	2.2672	12 19 43.7	15.623
11	11 33 7.40	2.1164	0 36 51.8	16.789	11	13 17 41.23	2.2723	12 35 19.1	15.555
12	11 35 14.42	2.1177	0 20 4.0	16.802	12	13 19 57.72	2.2774	12 50 50.3	15.485
13	11 37 21.52	2.1190	N. 0 3 15.5	16.814	13	13 22 14.52	2.2826	13 6 17.3	15.414
14	11 39 28.70	2.1204	S. 0 13 33.7	16.824	14	13 24 31.64	2.2879	13 21 40.0	15.341
15	11 41 35.97	2.1219	0 30 23.4	16.832	15	13 26 49.07	2.2933	13 36 58.2	15.265
16	11 43 43.33	2.1234	0 47 13.6	16.840	16	13 29 6.83	2.2987	13 52 11.8	15.187
17	11 45 50.78	2.1251	1 4 4.2	16.846	17	13 31 24.91	2.3040	14 7 20.7	15.107
18	11 47 58.34	2.1269	1 20 55.1	16.849	18	13 33 43.31	2.3094	14 22 24.7	15.026
19	11 50 6.01	2.1287	1 37 46.1	16.852	19	13 36 2.04	2.3150	14 37 23.8	14.943
20	11 52 13.79	2.1307	1 54 37.3	16.853	20	13 38 21.11	2.3206	14 52 17.9	14.858
21	11 54 21.69	2.1327	2 11 28.5	16.852	21	13 40 40.51	2.3262	15 7 6.8	14.771
22	11 56 29.71	2.1348	2 28 19.6	16.850	22	13 43 0.25	2.3318	15 21 50.4	14.682
23	11 58 37.86	2.1370	S. 2 45 10.5	16.846	23	13 45 20.33	2.3375	S. 15 36 28.6	14.591
FRIDAY 22.					SUNDAY 24.				
0	12 0 46.15	2.1393	S. 3 2 1.1	16.840	0	13 47 40.75	2.3433	S. 15 51 1.3	14.498
1	12 2 54.58	2.1417	3 18 51.3	16.832	1	13 50 1.52	2.3491	16 5 28.4	14.403
2	12 5 3.16	2.1442	3 35 41.0	16.824	2	13 52 22.64	2.3548	16 19 49.7	14.306
3	12 7 11.88	2.1467	3 52 30.2	16.814	3	13 54 44.10	2.3606	16 34 5.1	14.208
4	12 9 20.76	2.1493	4 9 18.7	16.802	4	13 57 5.91	2.3665	16 48 14.6	14.107
5	12 11 29.80	2.1521	4 26 6.4	16.787	5	13 59 28.08	2.3724	17 2 17.9	14.003
6	12 13 39.01	2.1550	4 42 53.2	16.772	6	14 1 50.60	2.3783	17 16 15.0	13.899
7	12 15 48.40	2.1579	4 59 39.0	16.755	7	14 4 13.48	2.3842	17 30 5.8	13.792
8	12 17 57.96	2.1608	5 16 23.8	16.737	8	14 6 36.71	2.3902	17 43 50.1	13.684
9	12 20 7.70	2.1639	5 33 7.4	16.716	9	14 9 0.30	2.3962	17 57 27.9	13.574
10	12 22 17.63	2.1671	5 49 49.7	16.693	10	14 11 24.25	2.4022	18 10 59.0	13.461
11	12 24 27.75	2.1703	6 6 30.6	16.669	11	14 13 48.56	2.4082	18 24 23.2	13.346
12	12 26 38.07	2.1737	6 23 10.0	16.644	12	14 16 13.23	2.4142	18 37 40.5	13.230
13	12 28 48.59	2.1771	6 39 47.9	16.617	13	14 18 38.26	2.4202	18 50 50.8	13.112
14	12 30 59.32	2.1807	6 56 24.0	16.587	14	14 21 3.65	2.4262	19 3 53.9	12.992
15	12 33 10.27	2.1843	7 12 58.3	16.556	15	14 23 29.40	2.4322	19 16 49.8	12.870
16	12 35 21.43	2.1879	7 29 30.7	16.523	16	14 25 55.52	2.4382	19 29 38.3	12.746
17	12 37 32.81	2.1917	7 46 1.1	16.488	17	14 28 21.99	2.4442	19 42 19.3	12.620
18	12 39 44.43	2.1956	8 2 29.3	16.452	18	14 30 48.82	2.4502	19 54 52.7	12.492
19	12 41 56.28	2.1994	8 18 55.3	16.414	19	14 33 16.01	2.4562	20 7 18.4	12.362
20	12 44 8.36	2.2033	8 35 19.0	16.375	20	14 35 43.56	2.4621	20 19 36.2	12.231
21	12 46 20.68	2.2074	8 51 40.3	16.333	21	14 38 11.46	2.4680	20 31 46.1	12.098
22	12 48 33.25	2.2116	9 7 59.0	16.289	22	14 40 39.72	2.4739	20 43 47.9	11.963
23	12 50 46.08	2.2159	9 24 15.0	16.243	23	14 43 8.33	2.4798	20 55 41.6	11.826
24	12 52 59.16	2.2202	S. 9 40 28.2	16.196	24	14 45 37.30	2.4857	S. 21 7 27.0	11.688

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 25.					WEDNESDAY 27.				
0	14 45 37.30	2.4857	S. 21 7 27.0	11.688	0	16 50 13.93	2.6610	S. 27 19 51.4	3.396
1	14 48 6.62	2.4915	21 19 4.1	11.547	1	16 52 53.60	2.6612	27 23 9.4	3.203
2	14 50 36.28	2.4973	21 30 32.6	11.403	2	16 55 33.27	2.6612	27 26 15.8	3.010
3	14 53 6.29	2.5031	21 41 52.5	11.259	3	16 58 12.94	2.6611	27 29 10.6	2.817
4	14 55 36.65	2.5088	21 53 3.7	11.114	4	17 0 52.60	2.6607	27 31 53.9	2.625
5	14 58 7.34	2.5143	22 4 6.2	10.967	5	17 3 32.22	2.6600	27 34 25.6	2.432
6	15 0 38.37	2.5200	22 14 59.8	10.819	6	17 6 11.80	2.6592	27 36 45.7	2.238
7	15 3 9.74	2.5255	22 25 44.3	10.667	7	17 8 51.33	2.6584	27 38 54.2	2.046
8	15 5 41.43	2.5309	22 36 19.8	10.515	8	17 11 30.81	2.6574	27 40 51.2	1.854
9	15 8 13.45	2.5364	22 46 46.1	10.360	9	17 14 10.22	2.6562	27 42 36.7	1.662
10	15 10 45.80	2.5418	22 57 3.0	10.204	10	17 16 49.55	2.6547	27 44 10.7	1.470
11	15 13 18.46	2.5470	23 7 10.6	10.047	11	17 19 28.78	2.6530	27 45 33.1	1.278
12	15 15 51.44	2.5522	23 17 8.7	9.888	12	17 22 7.91	2.6512	27 46 44.0	1.086
13	15 18 24.73	2.5573	23 26 57.2	9.727	13	17 24 46.93	2.6492	27 47 43.4	0.895
14	15 20 58.32	2.5623	23 36 36.0	9.565	14	17 27 25.82	2.6471	27 48 31.4	0.705
15	15 23 32.21	2.5673	23 46 5.0	9.402	15	17 30 4.58	2.6448	27 49 8.0	0.515
16	15 26 6.40	2.5722	23 55 24.2	9.237	16	17 32 43.19	2.6423	27 49 33.2	0.325
17	15 28 40.88	2.5770	24 4 33.5	9.071	17	17 35 21.65	2.6397	27 49 47.0	-0.136
18	15 31 15.64	2.5817	24 13 32.7	8.902	18	17 37 59.95	2.6368	27 49 49.5	+0.053
19	15 33 50.68	2.5862	24 22 21.8	8.733	19	17 40 38.07	2.6337	27 49 40.7	0.241
20	15 36 25.99	2.5907	24 31 0.7	8.563	20	17 43 16.00	2.6305	27 49 20.6	0.428
21	15 39 1.57	2.5952	24 39 29.4	8.392	21	17 45 53.73	2.6272	27 48 49.3	0.614
22	15 41 37.41	2.5994	24 47 47.7	8.218	22	17 48 31.26	2.6237	27 48 6.9	0.800
23	15 44 13.50	2.6035	S. 24 55 55.6	8.044	23	17 51 8.57	2.6199	S. 27 47 13.3	0.986
TUESDAY 26.					THURSDAY 28.				
0	15 46 49.83	2.6075	S. 25 3 53.0	7.868	0	17 53 45.65	2.6161	S. 27 46 8.6	1.170
1	15 49 26.40	2.6114	25 11 39.8	7.692	1	17 56 22.50	2.6121	27 44 52.9	1.333
2	15 52 3.20	2.6152	25 19 16.0	7.514	2	17 58 59.10	2.6079	27 43 26.2	1.535
3	15 54 40.23	2.6189	25 26 41.5	7.336	3	18 1 35.45	2.6036	27 41 48.7	1.716
4	15 57 17.47	2.6224	25 33 56.3	7.156	4	18 4 11.53	2.5991	27 40 0.3	1.897
5	15 59 54.92	2.6258	25 41 0.2	6.974	5	18 6 47.34	2.5945	27 38 1.1	2.077
6	16 2 32.57	2.6291	25 47 53.2	6.792	6	18 9 22.87	2.5897	27 35 51.1	2.256
7	16 5 10.41	2.6322	25 54 35.3	6.610	7	18 11 58.11	2.5848	27 33 30.4	2.432
8	16 7 48.43	2.6351	26 1 6.4	6.426	8	18 14 33.05	2.5797	27 30 59.2	2.608
9	16 10 26.62	2.6379	26 7 26.4	6.241	9	18 17 7.68	2.5745	27 28 17.4	2.784
10	16 13 4.98	2.6406	26 13 35.3	6.055	10	18 19 41.99	2.5692	27 25 25.1	2.958
11	16 15 43.49	2.6430	26 19 33.0	5.869	11	18 22 15.98	2.5637	27 22 22.4	3.131
12	16 18 22.14	2.6453	26 25 19.6	5.682	12	18 24 49.64	2.5582	27 19 9.4	3.302
13	16 21 0.93	2.6476	26 30 54.9	5.494	13	18 27 22.96	2.5524	27 15 46.1	3.473
14	16 23 39.85	2.6497	26 36 18.9	5.306	14	18 29 55.93	2.5465	27 12 12.6	3.642
15	16 26 18.99	2.6516	26 41 31.6	5.117	15	18 32 28.54	2.5406	27 8 29.1	3.809
16	16 28 58.04	2.6533	26 46 32.9	4.927	16	18 35 0.80	2.5346	27 4 35.5	3.976
17	16 31 37.29	2.6549	26 51 22.8	4.737	17	18 37 32.69	2.5283	27 0 31.9	4.142
18	16 34 16.63	2.6563	26 56 1.4	4.547	18	18 40 4.20	2.5220	26 56 18.5	4.305
19	16 36 56.05	2.6575	27 0 28.5	4.356	19	18 42 35.33	2.5157	26 51 55.3	4.468
20	16 39 35.53	2.6585	27 4 44.1	4.164	20	18 45 6.08	2.5092	26 47 22.3	4.629
21	16 42 15.07	2.6594	27 8 48.2	3.973	21	18 47 36.43	2.5028	26 42 39.8	4.788
22	16 44 54.66	2.6601	27 12 40.8	3.781	22	18 50 6.38	2.4963	26 37 47.8	4.946
23	16 47 34.28	2.6606	27 16 21.9	3.588	23	18 52 35.93	2.4891	26 32 46.3	5.103
24	16 50 13.93	2.6610	S. 27 19 51.4	3.396	24	18 55 5.07	2.4822	S. 26 27 35.4	5.259

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 29.					SUNDAY 31.				
0	18 55 5.07	2.4822	S. 26 27 35.4	5.259	0	20 45 27.92	2.1147	S. 19 45 53.7	10.876
1	18 57 33.79	2.4752	26 22 15.2	5.412	1	20 47 34.58	2.1074	19 34 58.6	10.957
2	19 0 2.09	2.4682	26 16 45.9	5.564	2	20 49 40.81	2.1002	19 23 58.8	11.036
3	19 2 29.97	2.4611	26 11 7.5	5.715	3	20 51 46.60	2.0929	19 12 54.3	11.113
4	19 4 57.42	2.4538	26 5 20.1	5.865	4	20 53 51.96	2.0858	19 1 45.2	11.189
5	19 7 24.43	2.4466	25 59 23.7	6.013	5	20 55 56.90	2.0788	18 50 31.6	11.265
6	19 9 51.01	2.4393	25 53 18.5	6.159	6	20 58 1.42	2.0718	18 39 13.6	11.337
7	19 12 17.15	2.4319	25 47 4.6	6.303	7	21 0 5.52	2.0648	18 27 51.2	11.408
8	19 14 42.84	2.4244	25 40 42.1	6.447	8	21 2 9.20	2.0579	18 16 24.6	11.478
9	19 17 8.08	2.4169	25 34 11.0	6.588	9	21 4 12.47	2.0511	18 4 53.8	11.547
10	19 19 32.87	2.4093	25 27 31.5	6.728	10	21 6 15.33	2.0443	17 53 18.9	11.616
11	19 21 57.20	2.4017	25 20 43.6	6.867	11	21 8 17.79	2.0376	17 41 39.9	11.682
12	19 24 21.08	2.3941	25 13 47.5	7.003	12	21 10 19.84	2.0309	17 29 57.0	11.747
13	19 26 44.50	2.3864	25 6 43.2	7.138	13	21 12 21.50	2.0244	17 18 10.2	11.812
14	19 29 7.45	2.3787	24 59 30.9	7.272	14	21 14 22.77	2.0179	17 6 19.6	11.875
15	19 31 29.94	2.3709	24 52 10.6	7.404	15	21 16 23.65	2.0114	16 54 25.2	11.937
16	19 33 51.96	2.3631	24 44 42.4	7.535	16	21 18 24.14	2.0051	16 42 27.2	11.997
17	19 36 13.51	2.3553	24 37 6.4	7.663	17	21 20 24.26	1.9988	16 30 25.6	12.056
18	19 38 34.60	2.3476	24 29 22.8	7.790	18	21 22 24.00	1.9926	16 18 20.5	12.114
19	19 40 55.22	2.3397	24 21 31.6	7.916	19	21 24 23.37	1.9864	16 6 11.9	12.171
20	19 43 15.36	2.3317	24 13 32.9	8.041	20	21 26 22.37	1.9802	15 54 0.0	12.226
21	19 45 35.02	2.3238	24 5 26.7	8.163	21	21 28 21.00	1.9741	15 41 44.8	12.281
22	19 47 54.21	2.3159	23 57 13.3	8.283	22	21 30 19.27	1.9682	15 29 26.3	12.335
23	19 50 12.93	2.3080	S. 23 48 52.7	8.402	23	21 32 17.19	1.9624	S. 15 17 4.6	12.387
SATURDAY 30.					MONDAY, JUNE 1.				
0	19 52 31.17	2.3001	S. 23 40 25.0	8.520	0	21 34 14.76	1.9566	S. 15 4 39.9	12.438
1	19 54 48.94	2.2922	23 31 50.3	8.636	PHASES OF THE MOON.				
2	19 57 6.23	2.2842	23 23 8.7	8.750					
3	19 59 23.04	2.2762	23 14 20.3	8.862					
4	20 1 39.37	2.2683	23 5 25.2	8.974					
5	20 3 55.23	2.2604	22 56 23.4	9.084	<div> <div>☾ Last Quarter . . . May 4 3 25.2</div> <div>● New Moon 12 7 46.6</div> <div>☾ First Quarter 19 18 21.0</div> <div>○ Full Moon 26 9 56.5</div> </div>				
6	20 6 10.62	2.2525	22 47 15.1	9.192					
7	20 8 25.53	2.2446	22 38 0.4	9.298					
8	20 10 39.97	2.2367	22 28 39.3	9.403					
9	20 12 53.94	2.2289	22 19 12.0	9.507	<div> <div>☾ Apogee May 8 3.7</div> <div>☾ Perigee 23 23.3</div> </div>				
10	20 15 7.44	2.2211	22 9 38.5	9.609					
11	20 17 20.47	2.2132	21 59 58.9	9.709					
12	20 19 33.03	2.2054	21 50 13.4	9.807					
13	20 21 45.12	2.1977	21 40 22.0	9.905					
14	20 23 56.75	2.1900	21 30 24.8	10.001					
15	20 26 7.92	2.1822	21 20 21.9	10.095					
16	20 28 18.62	2.1745	21 10 13.4	10.188					
17	20 30 28.86	2.1669	20 59 59.3	10.280					
18	20 32 38.65	2.1593	20 49 39.8	10.369					
19	20 34 47.98	2.1517	20 39 15.0	10.458					
20	20 36 56.86	2.1442	20 28 44.9	10.545					
21	20 39 5.29	2.1368	20 18 9.6	10.630					
22	20 41 13.28	2.1294	20 7 29.3	10.714					
23	20 43 20.82	2.1220	19 56 44.0	10.797					
24	20 45 27.92	2.1147	S. 19 45 53.7	10.878					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Spica W.	71 46 45	2508	73 27 47	2526	75 8 24	2545	76 48 35	2564
	SATURN W.	48 34 58	2545	50 15 9	2561	51 54 58	2576	53 34 26	2592
	Fomalhaut E.	58 48 59	2939	57 17 30	2975	55 46 46	3012	54 16 48	3051
	MARS E.	70 25 52	2761	68 50 33	2782	67 15 41	2801	65 41 15	2821
	α Pegasi E.	79 55 28	2719	78 19 13	2741	76 43 27	2762	75 8 9	2784
	VENUS E.	108 37 1	2942	107 5 35	2962	105 34 35	2982	104 4 0	3002
2	Spica W.	85 3 13	2654	86 40 55	2671	88 18 14	2689	89 55 9	2706
	SATURN W.	61 46 16	2673	63 23 32	2689	65 0 27	2705	66 37 0	2721
	Antares W.	39 9 38	2651	40 47 24	2669	42 24 45	2687	44 1 43	2704
	Fomalhaut E.	46 59 34	3276	45 34 54	3330	44 11 17	3386	42 48 45	3448
	MARS E.	57 55 27	2918	56 23 31	2938	54 52 0	2956	53 20 52	2976
	α Pegasi E.	67 18 55	2898	65 46 33	2922	64 14 42	2946	62 43 22	2971
	VENUS E.	96 37 18	3102	95 9 11	3121	93 41 27	3141	92 14 7	3159
	SUN E.	114 55 38	3005	113 25 32	3025	111 55 50	3043	110 26 30	3061
3	Spica W.	97 54 10	2787	99 28 55	2803	101 3 19	2818	102 37 24	2832
	SATURN W.	74 34 33	2798	76 9 4	2813	77 43 15	2828	79 17 7	2842
	Antares W.	52 0 58	2785	53 35 46	2801	55 10 13	2815	56 44 21	2830
	MARS E.	45 50 59	3065	44 22 6	3082	42 53 34	3099	41 25 23	3115
	α Pegasi E.	55 14 37	3103	53 46 31	3132	52 19 0	3161	50 52 4	3191
	VENUS E.	85 2 59	3250	83 37 49	3268	82 13 0	3285	80 48 31	3301
	SUN E.	103 5 19	3148	101 38 8	3164	100 11 16	3181	98 44 44	3197
4	SATURN W.	87 2 2	2908	88 34 11	2920	90 6 4	2932	91 37 42	2943
	Antares W.	64 30 26	2898	66 2 48	2910	67 34 54	2922	69 6 45	2934
	MARS E.	34 9 21	3194	32 43 5	3209	31 17 6	3223	29 51 24	3238
	VENUS E.	73 50 43	3378	72 28 1	3393	71 5 36	3407	69 43 27	3420
	SUN E.	91 36 37	3270	90 11 51	3283	88 47 20	3296	87 23 4	3309
5	SATURN W.	99 12 26	2995	100 42 45	3005	102 12 52	3013	103 42 49	3022
	Antares W.	76 42 32	2985	78 13 4	2993	79 43 25	3002	81 13 35	3009
	VENUS E.	62 56 16	3480	61 35 29	3490	60 14 54	3500	58 54 30	3511
	SUN E.	80 25 13	3365	79 2 17	3375	77 39 32	3384	76 16 57	3393
6	Antares W.	88 42 10	3043	90 11 29	3048	91 40 42	3053	93 9 49	3058
	α Aquilæ W.	45 13 34	4732	46 14 7	4652	47 15 47	4580	48 18 29	4515
	VENUS E.	52 15 8	3554	50 55 43	3561	49 36 26	3568	48 17 17	3575
	SUN E.	69 26 26	3431	68 4 44	3437	66 43 9	3443	65 21 41	3447
7	Antares W.	100 34 11	3073	102 2 53	3076	103 31 32	3077	105 0 10	3078
	α Aquilæ W.	53 45 5	4255	54 52 39	4215	56 0 51	4177	57 9 39	4148
	VENUS E.	41 43 14	3604	40 24 44	3610	39 6 20	3614	37 48 1	3619
	SUN E.	58 35 38	3468	57 14 38	3471	55 53 42	3473	54 32 48	3475
8	α Aquilæ W.	63 1 25	3997	64 13 8	3973	65 25 14	3950	66 37 43	3929
	Fomalhaut W.	36 20 27	4055	37 31 12	3990	38 43 1	3931	39 55 49	3879
	SUN E.	47 48 45	3480	46 27 59	3481	45 7 14	3481	43 46 29	3480
9	α Aquilæ W.	72 45 6	3839	73 59 28	3824	75 14 5	3810	76 28 57	3796
	Fomalhaut W.	46 11 54	3675	47 29 8	3642	48 46 57	3612	50 5 18	3585
	SUN E.	37 2 37	3479	35 41 49	3478	34 21 0	3477	33 0 10	3477

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	Spica W.	78 28 20	2582	80 7 40	2599	81 46 36	2618	83 25 7	2636
	SATURN W.	55 13 32	2608	56 52 16	2624	58 30 38	2640	60 8 38	2657
	Fomalhaut E.	52 47 38	3091	51 19 17	3133	49 51 48	3178	48 25 13	3225
	MARS E.	64 7 15	2841	62 33 40	2861	61 0 31	2880	59 27 46	2900
	α Pegasi E.	73 33 20	2805	71 58 59	2828	70 25 8	2852	68 51 47	2874
	VENUS E.	102 33 50	3022	101 4 5	3043	99 34 45	3062	98 5 49	3082
2	Spica W.	91 31 41	2722	93 7 51	2739	94 43 39	2756	96 19 5	2772
	SATURN W.	68 13 12	2737	69 49 3	2753	71 24 33	2768	72 59 43	2783
	Antares W.	45 38 18	2720	47 14 31	2738	48 50 21	2753	50 25 50	2769
	Fomalhaut E.	41 27 23	3514	40 7 14	3526	38 48 24	3565	37 30 57	3748
	MARS E.	51 50 9	2993	50 19 48	3012	48 49 50	3030	47 20 14	3047
	α Pegasi E.	61 12 33	2997	59 42 16	3022	58 12 30	3048	56 43 17	3075
	VENUS E.	90 47 9	3178	89 20 34	3197	87 54 21	3214	86 28 29	3233
	SUN E.	108 57 33	3079	107 28 58	3096	106 0 44	3114	104 32 51	3131
3	Spica W.	104 11 10	2846	105 44 38	2861	107 17 47	2874	108 50 39	2888
	SATURN W.	80 50 41	2855	82 23 57	2869	83 56 56	2883	85 29 37	2895
	Antares W.	58 18 10	2844	59 51 41	2859	61 24 53	2872	62 57 48	2885
	MARS E.	39 57 32	3132	38 30 1	3148	37 2 49	3165	35 35 56	3178
	α Pegasi E.	49 25 44	3223	48 0 2	3256	46 34 59	3290	45 10 36	3326
	VENUS E.	79 24 21	3318	78 0 30	3333	76 36 57	3348	75 13 41	3364
	SUN E.	97 18 31	3212	95 52 36	3227	94 26 59	3242	93 1 40	3256
4	SATURN W.	93 9 6	2954	94 40 16	2965	96 11 12	2976	97 41 55	2985
	Antares W.	70 38 21	2945	72 9 43	2955	73 40 52	2965	75 11 48	2975
	MARS E.	28 26 0	3252	27 0 52	3267	25 36 2	3282	24 11 29	3298
	VENUS E.	68 21 33	3433	66 59 54	3445	65 38 28	3457	64 17 16	3468
	SUN E.	85 59 3	3321	84 35 16	3332	83 11 42	3344	81 48 21	3355
5	SATURN W.	105 12 35	3030	106 42 11	3037	108 11 38	3045	109 40 55	3052
	Antares W.	82 43 36	3018	84 13 27	3024	85 43 10	3031	87 12 44	3038
	VENUS E.	57 34 18	3520	56 14 16	3529	54 54 24	3537	53 34 41	3546
	SUN E.	74 54 33	3401	73 32 18	3410	72 10 13	3417	70 48 16	3423
6	Antares W.	94 38 50	3062	96 7 46	3065	97 36 38	3069	99 5 26	3071
	α Aquilæ W.	49 22 8	4454	50 26 41	4399	51 32 3	4347	52 38 12	4300
	VENUS E.	46 58 15	3581	45 39 20	3587	44 20 32	3593	43 1 50	3598
	SUN E.	64 0 18	3453	62 39 1	3457	61 17 49	3461	59 56 41	3465
7	Antares W.	106 28 46	3079	107 57 21	3079	109 25 56	3079	110 54 31	3079
	α Aquilæ W.	58 19 0	4109	59 28 53	4078	60 39 16	4049	61 50 7	4022
	VENUS E.	36 29 47	3624	35 11 39	3629	33 53 36	3635	32 35 39	3639
	SUN E.	53 11 56	3477	51 51 6	3479	50 30 18	3480	49 9 31	3480
8	α Aquilæ W.	67 50 33	3910	69 3 43	3890	70 17 13	3872	71 31 1	3856
	Fomalhaut W.	41 9 30	3830	42 24 1	3787	43 39 17	3746	44 55 16	3709
	SUN E.	42 25 43	3480	41 4 57	3480	39 44 11	3480	38 23 24	3480
9	α Aquilæ W.	77 44 3	3784	78 59 22	3771	80 14 54	3760	81 30 38	3749
	Fomalhaut W.	51 24 9	3559	52 43 28	3535	54 3 14	3512	55 23 25	3489
	SUN E.	31 39 20	3477	30 18 30	3478	28 57 41	3478	27 36 52	3480

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Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	♌ Aquilæ W.	82 46 33	3740	84 2 38	3730	85 18 53	3728	86 35 17	3713
	Fomalhaut W.	56 44 1	3469	58 5 0	3450	59 26 20	3431	60 48 1	3414
	MARS W.	33 11 39	3332	34 35 14	3324	35 58 58	3317	37 22 50	3309
	SUN E.	26 16 5	3482	24 55 21	3486	23 34 41	3492	22 14 8	3488
14	SUN W.	19 53 46	3275	21 18 27	3250	22 43 37	3228	24 9 13	3207
	Pollux E.	38 9 58	2817	36 35 52	2810	35 1 37	2804	33 27 14	2798
	JUPITER E.	49 25 49	2843	47 52 17	2835	46 18 34	2826	44 44 40	2818
	Regulus E.	74 56 51	2794	73 22 15	2785	71 47 27	2776	70 12 28	2768
15	SUN W.	31 22 49	3184	32 50 29	3110	34 18 26	3097	35 46 39	3083
	JUPITER E.	36 52 29	2776	35 17 30	2767	33 42 19	2759	32 6 58	2750
	Regulus E.	62 14 45	2725	60 38 38	2716	59 2 19	2707	57 25 49	2698
	Spica E.	116 16 45	2728	114 40 42	2719	113 4 27	2710	111 28 0	2701
16	SUN W.	43 11 41	3022	44 41 26	3011	46 11 25	2999	47 41 39	2988
	Regulus E.	49 20 18	2653	47 42 35	2644	46 4 40	2635	44 26 33	2626
	Spica E.	103 22 47	2656	101 45 8	2646	100 7 16	2638	98 29 12	2629
17	SUN W.	55 16 22	2931	56 48 1	2920	58 19 54	2909	59 52 2	2898
	Spica E.	90 15 41	2581	88 36 20	2571	86 56 45	2561	85 16 57	2551
	SATURN E.	112 29 25	2596	110 50 25	2586	109 11 11	2576	107 31 43	2565
18	SUN W.	67 36 17	2841	69 9 52	2830	70 43 41	2818	72 17 45	2808
	Spica E.	76 54 32	2502	75 13 22	2492	73 31 57	2482	71 50 19	2472
	SATURN E.	99 10 45	2513	97 29 50	2503	95 48 41	2493	94 7 18	2482
19	SUN W.	80 11 44	2750	81 47 17	2740	83 23 4	2729	84 59 6	2717
	Spica E.	63 18 31	2421	61 35 26	2411	59 52 7	2401	58 8 33	2390
	SATURN E.	85 36 45	2431	83 53 55	2422	82 10 51	2412	80 27 33	2402
	Antares E.	109 10 52	2417	107 27 42	2408	105 44 18	2397	104 0 39	2387
20	SUN W.	93 3 0	2662	94 40 31	2651	96 18 17	2640	97 56 17	2629
	Pollux W.	41 41 16	2354	43 25 57	2343	45 10 54	2332	46 56 7	2321
	JUPITER W.	29 20 50	2387	31 4 44	2376	32 48 53	2366	34 33 17	2355
	Spica E.	49 27 4	2340	47 42 3	2330	45 56 47	2321	44 11 18	2311
	SATURN E.	71 47 33	2354	70 2 52	2345	68 17 58	2336	66 32 51	2327
	Antares E.	95 18 41	2335	93 33 33	2326	91 48 11	2315	90 2 34	2305
21	SUN W.	106 9 49	2580	107 49 12	2570	109 28 48	2561	111 8 37	2552
	Pollux W.	55 46 4	2270	57 32 48	2260	59 19 46	2251	61 6 58	2242
	JUPITER W.	43 18 59	2306	45 4 50	2297	46 50 54	2287	48 37 12	2279
	SATURN E.	57 44 12	2287	55 57 54	2281	54 11 27	2274	52 24 50	2269
	Antares E.	81 10 52	2258	79 23 50	2248	77 36 34	2239	75 49 5	2231
22	SUN W.	119 30 37	2512	121 11 33	2505	122 52 39	2499	124 33 54	2493
	Pollux W.	70 6 12	2200	71 54 39	2193	73 43 17	2186	75 32 6	2180
	JUPITER W.	57 31 50	2238	59 19 21	2231	61 7 2	2224	62 54 54	2218
	Regulus W.	33 8 6	2192	34 56 46	2184	36 45 38	2177	38 34 40	2170
	SATURN E.	43 29 57	2230	41 42 44	2219	39 55 29	2212	38 8 14	2209
	Antares E.	66 48 34	2191	64 59 53	2184	63 11 1	2177	61 21 59	2170
	♌ Aquilæ E.	116 23 38	2087	114 55 12	2084	113 26 6	2083	111 56 22	2085

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Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
10	α Aquilæ W.	87 51 50	3707	89 8 30	3699	90 25 18	3693	91 42 12	3688
	Fomalhaut W.	62 10 2	3397	63 32 22	3380	64 55 1	3365	66 17 57	3350
	MARS W.	38 46 51	3302	40 11 0	3294	41 35 18	3288	42 59 44	3280
	SUN E.	20 53 43	3510	19 33 30	3525	18 13 33	3543	16 53 56	3565
14	SUN W.	25 35 14	3188	27 1 37	3170	28 28 22	3154	29 55 26	3138
	Pollux E.	31 52 43	2792	30 18 4	2787	28 43 19	2782	27 8 27	2778
	JUPITER E.	43 10 36	2809	41 36 20	2801	40 1 54	2793	38 27 17	2785
	Regulus E.	68 37 18	2760	67 1 57	2750	65 26 24	2742	63 50 40	2734
15	SUN W.	37 15 9	3071	38 43 54	3058	40 12 55	3046	41 42 11	3034
	JUPITER E.	30 31 25	2742	28 55 41	2734	27 19 46	2725	25 43 40	2717
	Regulus E.	55 49 7	2689	54 12 13	2681	52 35 7	2672	50 57 49	2662
	Spica E.	109 51 22	2692	108 14 32	2683	106 37 29	2674	105 0 14	2665
16	SUN W.	49 12 7	2977	50 42 49	2965	52 13 46	2954	53 44 57	2942
	Regulus E.	42 48 13	2616	41 9 40	2607	39 30 55	2598	37 51 57	2588
	Spica E.	96 50 56	2618	95 12 26	2610	93 33 44	2600	91 54 49	2592
17	SUN W.	61 24 24	2886	62 57 1	2875	64 29 52	2864	66 2 57	2852
	Spica E.	83 36 55	2542	81 56 40	2532	80 16 11	2522	78 35 28	2512
	SATURN E.	105 52 0	2535	104 12 3	2544	102 31 51	2534	100 51 25	2524
18	SUN W.	73 52 3	2796	75 26 36	2785	77 1 24	2774	78 36 26	2762
	Spica E.	70 8 26	2462	68 26 19	2451	66 43 57	2441	65 1 21	2431
	SATURN E.	92 25 40	2472	90 43 48	2462	89 1 41	2452	87 19 20	2442
19	SUN W.	86 35 23	2706	88 11 55	2695	89 48 42	2684	91 25 44	2673
	Spica E.	56 24 44	2380	54 40 41	2370	52 56 23	2360	51 11 51	2350
	SATURN E.	78 44 1	2392	77 0 15	2382	75 16 15	2373	73 32 1	2365
	Antares E.	102 16 45	2376	100 32 36	2366	98 48 13	2355	97 3 34	2346
20	SUN W.	99 34 32	2619	101 13 1	2610	102 51 43	2599	104 30 39	2589
	Pollux W.	48 41 36	2311	50 27 20	2300	52 13 20	2289	53 59 35	2280
	JUPITER W.	36 17 56	2345	38 2 50	2335	39 47 59	2325	41 33 22	2315
	Spica E.	42 25 34	2301	40 39 36	2292	38 53 25	2283	37 7 0	2274
	SATURN E.	64 47 31	2319	63 1 59	2311	61 16 15	2302	59 30 19	2295
	Antares E.	88 16 42	2296	86 30 36	2285	84 44 15	2276	82 57 40	2267
21	SUN W.	112 48 38	2343	114 28 51	2335	116 9 15	2327	117 49 51	2320
	Pollux W.	62 54 23	2233	64 42 2	2225	66 29 53	2216	68 17 57	2208
	JUPITER W.	50 23 43	2270	52 10 27	2262	53 57 23	2253	55 44 31	2246
	SATURN E.	50 38 5	2264	48 51 12	2259	47 4 12	2256	45 17 7	2252
	Antares E.	74 1 24	2223	72 13 30	2214	70 25 23	2206	68 37 4	2198
22	SUN W.	126 15 17	2487	127 56 48	2482	129 38 26	2478	131 20 10	2474
	Pollux W.	77 21 4	2173	79 10 12	2168	80 59 28	2162	82 48 53	2157
	JUPITER W.	64 42 55	2211	66 31 6	2206	68 19 25	2200	70 7 53	2195
	Regulus W.	40 23 52	2165	42 13 13	2159	44 2 43	2153	45 52 21	2148
	SATURN E.	36 21 0	2253	34 33 51	2253	32 46 49	2265	30 59 58	2276
	Antares E.	59 32 46	2164	57 43 24	2159	55 53 54	2153	54 4 16	2149
	α Aquilæ E.	110 26 3	2969	108 55 12	2946	107 23 51	2925	105 52 4	2906

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23	Pollux W.	84 38 25	2153	86 28 4	2148	88 17 50	2145	90 7 41	2141
	JUPITER W.	71 56 28	2190	73 45 10	2186	75 33 58	2183	77 22 51	2180
	Regulus W.	47 42 7	2144	49 31 59	2139	51 21 58	2136	53 12 2	2133
	Antares E.	52 14 31	2145	50 24 39	2140	48 34 41	2136	46 44 37	2133
	♌ Aquilæ E.	104 19 53	2209	102 47 20	2274	101 14 28	2261	99 41 19	2250
24	Pollux W.	99 17 54	2134	101 8 2	2133	102 58 11	2134	104 48 19	2134
	JUPITER W.	86 28 15	2171	88 17 26	2170	90 6 38	2171	91 55 49	2172
	Regulus W.	62 23 21	2124	64 13 43	2124	66 4 6	2124	67 54 28	2125
	♌ Aquilæ E.	91 52 46	2221	90 18 45	2221	88 44 44	2221	87 10 44	2225
25	JUPITER W.	101 1 4	2186	102 49 53	2190	104 38 36	2194	106 27 12	2200
	Regulus W.	77 5 41	2138	78 55 42	2148	80 45 37	2147	82 35 25	2153
	♌ Aquilæ E.	79 22 30	2267	77 49 29	2222	76 16 47	2228	74 44 26	2216
	Fomalhaut E.	103 57 26	2465	102 15 24	2465	100 33 22	2466	98 51 21	2469
26	Regulus W.	91 42 4	2127	93 30 51	2196	95 19 24	2205	97 7 44	2215
	Spica W.	37 41 38	2194	39 30 14	2202	41 18 38	2211	43 6 49	2220
	♌ Aquilæ E.	67 9 28	2044	65 40 10	2078	64 11 34	2114	62 43 42	2155
	Fomalhaut E.	90 22 39	2497	88 41 22	2507	87 0 18	2517	85 19 28	2526
27	Spica W.	52 4 1	2274	53 50 38	2287	55 36 56	2300	57 22 56	2313
	SATURN W.	31 6 34	2322	32 50 34	2322	34 34 34	2325	36 18 30	2329
	Fomalhaut E.	76 59 45	2601	75 20 52	2619	73 42 23	2638	72 4 20	2658
	♌ Pegasi E.	98 41 52	2476	97 0 5	2487	95 18 33	2499	93 37 18	2511
28	Spica W.	66 7 59	2324	67 51 57	2398	69 35 34	2414	71 18 49	2430
	SATURN W.	44 55 56	2431	46 38 46	2442	48 21 21	2454	50 3 39	2467
	Fomalhaut E.	64 1 24	2779	62 26 28	2806	60 52 8	2835	59 18 26	2867
	♌ Pegasi E.	85 15 40	2523	83 36 22	2600	81 57 27	2617	80 18 55	2635
	MARS E.	96 18 54	2635	94 40 46	2651	93 3 0	2667	91 25 36	2684
29	Spica W.	79 49 24	2510	81 30 23	2527	83 10 58	2543	84 51 11	2561
	SATURN W.	58 30 30	2536	60 10 53	2551	61 50 56	2566	63 30 38	2582
	Antares W.	33 55 48	2508	35 36 50	2525	37 17 29	2541	38 57 45	2558
	Fomalhaut E.	51 40 42	3052	50 11 33	3098	48 43 18	3122	47 15 59	3153
	♌ Pegasi E.	72 12 33	2733	70 36 37	2753	69 1 8	2775	67 26 8	2798
	MARS E.	83 24 14	2770	81 49 7	2788	80 14 23	2805	78 40 2	2824
30	Spica W.	93 6 29	2643	94 44 25	2660	96 21 58	2677	97 59 9	2692
	SATURN W.	71 43 48	2660	73 21 22	2675	74 58 35	2691	76 35 27	2707
	Antares W.	47 13 21	2641	48 51 20	2657	50 28 57	2674	52 6 12	2690
	♌ Pegasi E.	59 38 39	2920	58 6 45	2946	56 35 24	2971	55 4 37	3001
	MARS E.	70 54 7	2913	69 22 5	2931	67 50 26	2949	66 19 9	2967
	♌ Arietis E.	100 53 57	2661	99 16 23	2676	97 39 11	2692	96 2 21	2709
31	Spica W.	105 59 44	2772	107 34 49	2787	109 9 34	2802	110 43 59	2817
	SATURN W.	84 34 34	2724	86 9 23	2799	87 43 52	2814	89 18 2	2828
	Antares W.	60 7 5	2749	61 42 13	2764	63 17 2	2798	64 51 32	2814
	MARS E.	58 48 18	3054	57 19 12	3071	55 50 27	3087	54 22 2	3105
	♌ Arietis E.	88 3 30	2727	86 28 45	2802	84 54 20	2817	83 20 14	2832
	SUN E.	121 58 34	3133	120 31 5	3148	119 3 54	3164	117 37 2	3180

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23	Pollux W.	91 57 37	2139	93 47 37	2137	95 37 40	2135	97 27 46	2134
	JUPITER W.	79 11 49	2177	81 0 51	2174	82 49 57	2173	84 39 5	2172
	Regulus W.	55 2 11	2130	56 52 24	2128	58 42 41	2126	60 33 0	2125
	Antares E.	44 54 28	2130	43 4 15	2128	41 13 58	2126	39 23 39	2125
	α Aquilæ E.	98 7 56	2241	96 34 21	2233	95 0 36	2228	93 26 44	2223
24	Pollux W.	106 38 26	2136	108 28 30	2138	110 18 31	2141	112 8 27	2145
	JUPITER W.	93 44 58	2174	95 34 5	2176	97 23 9	2178	99 12 9	2182
	Regulus W.	69 44 49	2126	71 35 8	2129	73 25 23	2132	75 15 34	2134
	α Aquilæ E.	85 36 48	2229	84 2 58	2236	82 29 17	2245	80 55 47	2255
25	JUPITER W.	108 15 39	2206	110 3 57	2213	111 52 5	2220	113 40 2	2228
	Regulus W.	84 25 4	2159	86 14 34	2165	88 3 55	2172	89 53 5	2179
	α Aquilæ E.	73 12 28	2237	71 40 56	2261	70 9 54	2286	68 39 24	3014
	Fomalhaut E.	97 9 24	2472	95 27 31	2477	93 45 45	2482	92 4 7	2489
26	Regulus W.	98 55 49	2225	100 43 39	2236	102 31 13	2247	104 18 31	2259
	Spica W.	44 54 46	2230	46 42 29	2241	48 29 56	2251	50 17 7	2269
	α Aquilæ E.	61 16 39	3198	59 50 27	3245	58 25 11	3295	57 0 54	3351
	Fomalhaut E.	83 38 54	2540	81 58 37	2554	80 18 39	2569	78 39 1	2585
27	Spica W.	59 8 37	2326	60 53 58	2340	62 38 59	2355	64 23 39	2368
	SATURN W.	38 2 20	2396	39 46 1	2405	41 29 32	2411	43 12 51	2422
	Fomalhaut E.	70 26 44	2680	68 49 37	2708	67 13 0	2726	65 36 55	2738
	α Pegasi E.	91 56 20	2524	90 15 40	2538	88 35 20	2553	86 55 20	2569
28	Spica W.	73 1 41	2445	74 44 11	2462	76 26 18	2478	78 8 2	2494
	SATURN W.	51 45 39	2480	53 27 20	2493	55 8 43	2507	56 49 46	2521
	Fomalhaut E.	57 45 25	2900	56 13 6	2935	54 41 31	2971	53 10 42	3010
	α Pegasi E.	78 40 48	2653	77 3 5	2672	75 25 48	2692	73 48 57	2722
	MARS E.	89 48 34	2701	88 11 55	2717	86 35 38	2735	84 59 44	2755
29	Spica W.	86 31 0	2577	88 10 26	2593	89 49 30	2610	91 28 11	2627
	SATURN W.	65 9 58	2596	66 48 58	2612	68 27 36	2628	70 5 53	2644
	Antares W.	40 37 38	2574	42 17 8	2591	43 56 15	2608	45 34 59	2624
	Fomalhaut E.	45 49 41	3247	44 24 27	3304	43 0 20	3366	41 37 25	3434
	α Pegasi E.	65 51 37	2821	64 17 36	2845	62 44 6	2869	61 11 7	2895
	MARS E.	77 6 5	2842	75 32 31	2859	73 59 20	2877	72 26 32	2895
30	Spica W.	99 35 59	2709	101 12 27	2725	102 48 33	2741	104 24 19	2756
	SATURN W.	78 11 57	2722	79 48 7	2738	81 23 56	2753	82 59 25	2769
	Antares W.	53 43 5	2706	55 19 37	2722	56 55 47	2738	58 31 36	2753
	α Pegasi E.	53 34 26	3090	52 4 51	3061	50 35 54	3093	49 7 36	3126
	MARS E.	64 48 15	2985	63 17 43	3002	61 47 33	3020	60 17 45	3037
	α Arietis E.	94 25 53	2725	92 49 46	2741	91 14 0	2756	89 38 35	2772
31	Spica W.	112 18 5	2831	113 51 53	2845	115 25 22	2859	116 58 34	2873
	SATURN W.	90 51 54	2842	92 25 27	2856	93 58 42	2870	95 31 39	2883
	Antares W.	66 25 42	2822	67 59 34	2842	69 33 7	2855	71 6 23	2869
	MARS E.	52 53 58	3120	51 26 13	3137	49 58 48	3153	48 31 42	3168
	α Arietis E.	81 46 28	2846	80 13 0	2861	78 39 51	2875	77 7 0	2888
	SUN E.	116 10 29	3194	114 44 13	3209	113 18 15	3224	111 52 34	3237

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Equation of Time, to be Subtracted from	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Added to Apparent Time.	
		h m s	s	° ' "	"	' "	s	m s	s
Mon.	1	4 39 31.30	10.242	N. 22 9 56.9	+19.67	15 48.28	68.45	2 20.22	0.384
Tues.	2	4 43 37.31	10.259	22 17 37.4	18.70	15 48.14	68.50	2 10.79	0.401
Wed.	3	4 47 43.71	10.275	22 24 54.5	17.73	15 48.01	68.55	2 0.98	0.417
Thur.	4	4 51 50.49	10.290	22 31 48.3	+16.75	15 47.88	68.60	1 50.78	0.432
Frid.	5	4 55 57.62	10.304	22 38 18.4	15.76	15 47.75	68.65	1 40.24	0.446
Sat.	6	5 0 5.10	10.317	22 44 24.6	14.76	15 47.63	68.69	1 29.35	0.460
SUN.	7	5 4 12.88	10.330	22 50 7.0	+13.76	15 47.51	68.73	1 18.16	0.473
Mon.	8	5 8 20.96	10.342	22 55 25.4	12.76	15 47.40	68.76	1 6.67	0.484
Tues.	9	5 12 29.30	10.353	23 0 19.5	11.75	15 47.30	68.80	0 54.92	0.495
Wed.	10	5 16 37.89	10.362	23 4 49.3	+10.73	15 47.20	68.83	0 42.92	0.504
Thur.	11	5 20 46.69	10.371	23 8 54.7	9.71	15 47.10	68.86	0 30.71	0.513
Frid.	12	5 24 55.68	10.378	23 12 35.6	8.69	15 47.01	68.88	0 18.31	0.520
Sat.	13	5 29 4.84	10.384	23 15 51.9	+ 7.67	15 46.93	68.90	0 5.74	0.526
SUN.	14	5 33 14.14	10.389	23 18 43.6	6.64	15 46.85	68.92	0 6.96	0.531
Mon.	15	5 37 23.54	10.394	23 21 10.5	5.61	15 46.78	68.94	0 19.77	0.536
Tues.	16	5 41 33.03	10.397	23 23 12.8	+ 4.58	15 46.71	68.95	0 32.66	0.539
Wed.	17	5 45 42.58	10.399	23 24 50.2	3.55	15 46.65	68.96	0 45.62	0.540
Thur.	18	5 49 52.16	10.399	23 26 2.9	2.51	15 46.59	68.97	0 58.60	0.541
Frid.	19	5 54 1.76	10.399	23 26 50.8	+ 1.48	15 46.54	68.97	1 11.60	0.541
Sat.	20	5 58 11.33	10.398	23 27 14.0	+ 0.45	15 46.49	68.97	1 24.59	0.540
SUN.	21	6 2 20.88	10.397	23 27 12.3	- 0.59	15 46.44	68.97	1 37.54	0.538
Mon.	22	6 6 30.37	10.394	23 26 45.9	- 1.62	15 46.40	68.96	1 50.43	0.535
Tues.	23	6 10 39.77	10.390	23 25 54.7	2.65	15 46.36	68.95	2 3.24	0.532
Wed.	24	6 14 49.09	10.385	23 24 38.8	3.68	15 46.32	68.94	2 15.96	0.528
Thur.	25	6 18 58.28	10.380	23 22 58.3	- 4.70	15 46.29	68.92	2 28.57	0.522
Frid.	26	6 23 7.34	10.374	23 20 53.1	5.73	15 46.26	68.90	2 41.03	0.516
Sat.	27	6 27 16.24	10.368	23 18 23.4	6.75	15 46.24	68.88	2 53.34	0.509
SUN.	28	6 31 24.68	10.360	23 15 22.1	- 7.77	15 46.21	68.85	3 5.49	0.501
Mon.	29	6 35 33.52	10.352	23 12 10.4	8.79	15 46.19	68.82	3 17.44	0.493
Tues.	30	6 39 42.85	10.342	23 8 27.2	9.80	15 46.17	68.79	3 29.18	0.484
Wed.	31	6 43 42.35	10.332	N. 23 4 19.8	-10.81	15 46.16	68.75	3 40.69	0.474

NOTE.—The mean time of sunrise or sunset may be found by subtracting 0.96 from the apparent time.

For each day of the month, the time of sunrise or sunset is given for each hour of the day. If the times are increasing, the day is shorter; if they are decreasing, the day is longer.

AT GREENWICH MEAN NOON.									
Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.	
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.				
						Subtracted from Mean Time.			
Mon.	1	^h 4 ^m 39 ^s 31.70	10.241	N. 22° 9' 57.7"	+19.66	^m 2 ^s 20.20	0.384	^h 4 ^m 41 ^s 51.90	
Tues.	2	4 43 37.68	10.257	22 17 38.0	18.69	2 10.78	0.401	4 45 48.46	
Wed.	3	4 47 44.06	10.273	22 24 55.2	17.72	2 0.96	0.417	4 49 45.02	
Thur.	4	4 51 50.81	10.289	22 31 48.8	+16.74	1 50.77	0.432	4 53 41.58	
Frid.	5	4 55 57.91	10.303	22 38 18.8	15.76	1 40.22	0.446	4 57 38.14	
Sat.	6	5 0 5.35	10.317	22 44 25.0	14.76	1 29.34	0.459	5 1 34.69	
SUN.	7	5 4 13.11	10.329	22 50 7.4	+13.76	1 18.15	0.472	5 5 31.25	
Mon.	8	5 8 21.15	10.341	22 55 25.6	12.76	1 6.66	0.484	5 9 27.81	
Tues.	9	5 12 29.46	10.351	23 0 19.6	11.75	0 54.91	0.495	5 13 24.37	
Wed.	10	5 16 38.01	10.361	23 4 49.4	+10.73	0 42.92	0.504	5 17 20.93	
Thur.	11	5 20 46.78	10.369	23 8 54.8	9.71	0 30.71	0.513	5 21 17.49	
Frid.	12	5 24 55.74	10.377	23 12 35.6	8.69	0 18.31	0.520	5 25 14.04	
Sat.	13	5 29 4.86	10.383	23 15 51.9	+ 7.67	0 5.74	0.526	5 29 10.60	
SUN.	14	5 33 14.12	10.388	23 18 43.6	6.64	0 6.96	0.531	5 33 7.16	
Mon.	15	5 37 23.49	10.392	23 21 10.5	5.61	0 19.77	0.535	5 37 3.72	
Tues.	16	5 41 32.94	10.395	23 23 12.8	+ 4.58	0 32.66	0.538	5 41 0.28	
Wed.	17	5 45 42.45	10.397	23 24 50.2	3.55	0 45.61	0.540	5 44 56.84	
Thur.	18	5 49 51.99	10.398	23 26 2.9	2.51	0 58.60	0.541	5 48 53.40	
Frid.	19	5 54 1.55	10.398	23 26 50.8	+ 1.48	1 11.59	0.541	5 52 49.96	
Sat.	20	5 58 11.09	10.397	23 27 14.0	+ 0.45	1 24.57	0.540	5 56 46.52	
SUN.	21	6 2 20.60	10.395	23 27 12.3	- 0.58	1 37.53	0.538	6 0 43.07	
Mon.	22	6 6 30.05	10.392	23 26 45.9	- 1.61	1 50.42	0.535	6 4 39.63	
Tues.	23	6 10 39.42	10.388	23 25 54.8	2.64	2 3.23	0.532	6 8 36.19	
Wed.	24	6 14 48.69	10.384	23 24 39.0	3.67	2 15.94	0.527	6 12 32.75	
Thur.	25	6 18 57.85	10.379	23 22 58.5	- 4.70	2 28.55	0.522	6 16 29.31	
Frid.	26	6 23 6.88	10.373	23 20 53.4	5.73	2 41.01	0.516	6 20 25.87	
Sat.	27	6 27 15.75	10.366	23 18 23.7	6.75	2 53.32	0.509	6 24 22.43	
SUN.	28	6 31 24.45	10.358	23 15 29.5	- 7.77	3 5.46	0.502	6 28 18.98	
Mon.	29	6 35 32.96	10.350	23 12 10.8	8.78	3 17.41	0.494	6 32 15.54	
Tues.	30	6 39 41.25	10.341	23 8 27.8	9.80	3 29.15	0.484	6 36 12.10	
Wed.	31	6 43 49.32	10.331	N. 23° 4' 20.5"	-10.81	3 40.66	0.474	6 40 8.66	
NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign — indicates that north declinations are decreasing.								Diff. for 1 Hour, +9 ^s .8565. (Table III.)	

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	153	71 25 52.9	25 23.8	143.61	— 0.20	0.0062400	+26.5	19 14 58.36
2	154	72 23 19.2	22 50.0	143.58	— 0.07	0.0063029	25.8	19 11 2.45
3	155	73 20 44.9	20 15.5	143.56	+ 0.07	0.0063642	25.1	19 7 6.54
4	156	74 18 10.0	17 40.4	143.53	+ 0.20	0.0064235	+24.3	19 3 10.63
5	157	75 15 34.4	15 4.6	143.51	0.31	0.0064810	23.5	18 59 14.72
6	158	76 12 58.4	12 28.2	143.48	0.39	0.0065362	22.6	18 55 18.80
7	159	77 10 21.6	9 51.2	143.46	+ 0.46	0.0065894	+21.6	18 51 22.89
8	160	78 7 44.3	7 13.8	143.43	0.50	0.0066401	20.6	18 47 26.98
9	161	79 5 6.3	4 35.7	143.40	0.50	0.0066884	19.6	18 43 31.07
10	162	80 2 27.7	1 56.9	143.38	+ 0.48	0.0067342	+18.6	18 39 35.15
11	163	80 59 48.5	59 17.5	143.35	0.43	0.0067775	17.5	18 35 39.24
12	164	81 57 8.4	56 37.2	143.32	0.35	0.0068182	16.5	18 31 43.33
13	165	82 54 27.7	53 56.3	143.29	+ 0.25	0.0068565	+15.4	18 27 47.41
14	166	83 51 46.3	51 14.7	143.26	+ 0.13	0.0068922	14.4	18 23 51.50
15	167	84 49 4.0	48 32.2	143.22	0.00	0.0069256	13.4	18 19 55.59
16	168	85 46 21.0	45 49.0	143.19	— 0.13	0.0069566	+12.5	18 15 59.68
17	169	86 43 37.2	43 5.1	143.16	0.27	0.0069854	11.6	18 12 3.76
18	170	87 40 52.7	40 20.4	143.13	0.38	0.0070123	10.7	18 8 7.85
19	171	88 38 7.4	37 34.9	143.10	— 0.49	0.0070369	+ 9.9	18 4 11.94
20	172	89 35 21.4	34 48.7	143.07	0.57	0.0070598	9.2	18 0 16.02
21	173	90 32 34.8	32 1.9	143.04	0.62	0.0070810	8.5	17 56 20.11
22	174	91 29 47.6	29 14.5	143.02	— 0.64	0.0071005	+ 7.8	17 52 24.20
23	175	92 26 59.9	26 26.6	143.00	0.63	0.0071184	7.1	17 48 28.29
24	176	93 24 11.8	23 38.3	142.99	0.59	0.0071348	6.5	17 44 32.37
25	177	94 21 23.3	20 49.6	142.98	— 0.53	0.0071500	+ 6.0	17 40 36.46
26	178	95 18 34.6	18 0.7	142.97	0.44	0.0071636	5.4	17 36 40.55
27	179	96 15 45.9	15 11.9	142.96	0.33	0.0071757	4.7	17 32 44.64
28	180	97 12 57.0	12 22.8	142.96	— 0.20	0.0071864	+ 4.1	17 28 48.72
29	181	98 10 8.1	9 33.7	142.97	— 0.07	0.0071957	3.5	17 24 52.81
30	182	99 7 19.4	6 44.8	142.97	+ 0.07	0.0072031	2.8	17 20 56.90
31	183	100 4 30.8	3 56.0	142.98	+ 0.20	0.0072090	+ 2.1	17 17 0.98
NOTE.—The numbers in column A correspond to the true equinox of the date; in column A' to the mean equinox of January 1 st .								
								Diff. for 1 Hour, —9 ^h .8296. Table II.)

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	h m	h m	h m	"	h m	"	h m	m	d
1	15 8.1	15 3.3	55 26.0	-1.56	55 8.3	-1.39	17 22.7	1.75	19.7
2	14 59.0	14 55.4	54 52.7	1.20	54 39.4	1.00	18 3.6	1.66	20.7
3	14 52.5	14 50.3	54 28.7	0.78	54 20.6	0.57	18 43.0	1.63	21.7
4	14 48.8	14 47.9	54 15.0	-0.36	54 11.9	-0.15	19 22.1	1.64	22.7
5	14 47.8	14 48.3	54 11.4	+0.05	54 13.2	+0.25	20 2.1	1.70	23.7
6	14 49.4	14 51.1	54 17.3	0.43	54 23.6	0.60	20 44.0	1.81	24.7
7	14 53.3	14 56.1	54 31.8	+0.76	54 41.9	+0.90	21 29.0	1.95	25.7
8	14 59.2	15 2.7	54 53.5	1.02	55 6.4	1.13	22 17.7	2.11	26.7
9	15 6.5	15 10.6	55 20.5	1.21	55 35.4	1.27	23 10.1	2.26	27.7
10	15 14.9	15 19.2	55 51.0	+1.32	56 7.0	+1.34	6		28.7
11	15 23.7	15 28.1	56 23.2	1.35	56 39.4	1.34	0 5.7	2.36	0.1
12	15 32.4	15 36.6	56 55.3	1.31	57 10.9	1.28	1 2.8	2.38	1.1
13	15 40.8	15 44.7	57 26.0	+1.23	57 40.5	+1.18	1 59.4	2.33	2.1
14	15 48.5	15 52.0	57 54.3	1.12	58 7.4	1.05	2 54.0	2.22	3.1
15	15 55.4	15 58.5	58 19.6	0.99	58 31.1	0.92	3 45.9	2.11	4.1
16	16 1.4	16 4.0	58 41.7	+0.85	58 51.5	+0.78	4 35.4	2.02	5.1
17	16 6.4	16 8.6	59 0.3	0.70	59 8.2	0.61	5 23.3	1.98	6.1
18	16 10.4	16 12.0	59 15.0	0.52	59 20.7	0.42	6 10.9	2.00	7.1
19	16 13.2	16 14.0	59 25.0	+0.30	59 28.0	+0.18	6 59.6	2.07	8.1
20	16 14.4	16 14.2	59 29.4	+0.04	59 29.0	-0.11	7 50.8	2.20	9.1
21	16 13.6	16 12.5	59 26.7	-0.27	59 22.5	0.44	8 45.3	2.35	10.1
22	16 10.7	16 8.4	59 16.1	-0.62	59 7.6	-0.80	9 43.6	2.49	11.1
23	16 5.5	16 2.0	58 56.9	0.98	58 44.1	1.15	10 44.5	2.56	12.1
24	15 58.0	15 53.6	58 29.4	1.30	58 13.0	1.43	11 45.8	2.53	13.1
25	15 48.7	15 43.5	57 55.1	-1.54	57 36.0	-1.63	12 44.9	2.39	14.1
26	15 38.0	15 32.5	57 16.0	1.68	56 55.6	1.70	13 39.9	2.19	15.1
27	15 26.9	15 21.4	56 35.1	1.70	56 14.9	1.66	14 30.1	2.00	16.1
28	15 16.1	15 11.0	55 55.3	-1.59	55 36.7	-1.50	15 16.0	1.83	17.1
29	15 6.3	15 2.0	55 19.4	1.38	55 3.7	1.23	15 58.5	1.72	18.1
30	14 58.3	14 55.1	54 49.9	1.06	54 38.2	0.88	16 38.8	1.65	19.1
31	14 52.5	14 50.6	54 28.8	-0.69	54 21.7	-0.48	17 18.2	1.64	20.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 1.					WEDNESDAY 3.				
	h m s	"	° ' "	"		h m s	"	° ' "	"
0	21 34 14.76	1.9566	S. 15 4 39.9	12.438	0	23 2 57.17	1.7703	S. 4 27 6.6	13.797
1	21 36 11.98	1.9508	14 52 12.1	12.488	1	23 4 43.33	1.7684	4 13 18.5	13.806
2	21 38 8.86	1.9458	14 39 41.3	12.537	2	23 6 29.38	1.7666	3 59 29.9	13.815
3	21 40 5.41	1.9396	14 27 7.7	12.584	3	23 8 15.32	1.7648	3 45 40.7	13.823
4	21 42 1.62	1.9341	14 14 31.2	12.631	4	23 10 1.16	1.7632	3 31 51.1	13.830
5	21 43 57.50	1.9287	14 1 51.9	12.678	5	23 11 46.90	1.7616	3 18 1.1	13.836
6	21 45 53.06	1.9234	13 49 9.8	12.723	6	23 13 32.55	1.7601	3 4 10.8	13.841
7	21 47 48.30	1.9181	13 36 25.1	12.767	7	23 15 18.11	1.7586	2 50 20.2	13.846
8	21 49 43.23	1.9128	13 23 37.8	12.809	8	23 17 3.59	1.7572	2 36 29.3	13.851
9	21 51 37.84	1.9077	13 10 48.0	12.851	9	23 18 48.98	1.7559	2 22 38.1	13.855
10	21 53 32.15	1.9027	12 57 55.7	12.892	10	23 20 34.30	1.7548	2 8 46.7	13.857
11	21 55 26.16	1.8977	12 45 1.0	12.932	11	23 22 19.56	1.7537	1 54 55.2	13.859
12	21 57 19.87	1.8928	12 32 3.9	12.971	12	23 24 4.75	1.7527	1 41 3.6	13.861
13	21 59 13.29	1.8880	12 19 4.5	13.008	13	23 25 49.88	1.7517	1 27 11.9	13.862
14	22 1 6.43	1.8833	12 6 2.9	13.045	14	23 27 34.96	1.7508	1 13 20.2	13.863
15	22 2 59.29	1.8787	11 52 59.1	13.081	15	23 29 19.98	1.7500	0 59 28.4	13.863
16	22 4 51.87	1.8741	11 39 53.2	13.116	16	23 31 4.96	1.7493	0 45 36.7	13.861
17	22 6 44.18	1.8695	11 26 45.2	13.150	17	23 32 49.90	1.7487	0 31 45.1	13.859
18	22 8 36.21	1.8650	11 13 35.2	13.183	18	23 34 34.81	1.7481	0 17 53.6	13.857
19	22 10 27.98	1.8608	11 0 23.2	13.216	19	23 36 19.68	1.7476	S. 0 4 2.2	13.854
20	22 12 19.50	1.8566	10 47 9.3	13.247	20	23 38 4.52	1.7473	N. 0 9 48.9	13.850
21	22 14 10.77	1.8524	10 33 53.6	13.277	21	23 39 49.35	1.7470	0 23 39.8	13.846
22	22 16 1.79	1.8482	10 20 36.1	13.307	22	23 41 34.16	1.7467	0 37 30.4	13.841
23	22 17 52.56	1.8442	S. 10 7 16.8	13.337	23	23 43 18.96	1.7465	N. 0 51 20.7	13.836
TUESDAY 2.					THURSDAY 4.				
	h m s	"	° ' "	"		h m s	"	° ' "	"
0	22 19 43.10	1.8404	S. 9 53 55.7	13.365	0	23 45 3.74	1.7463	N. 1 5 10.7	13.830
1	22 21 33.41	1.8366	9 40 33.0	13.391	1	23 46 48.52	1.7464	1 19 0.3	13.823
2	22 23 23.49	1.8328	9 27 8.8	13.417	2	23 48 33.31	1.7465	1 32 49.5	13.815
3	22 25 13.34	1.8290	9 13 43.0	13.443	3	23 50 18.10	1.7466	1 46 38.2	13.807
4	22 27 2.97	1.8254	9 0 15.7	13.468	4	23 52 2.90	1.7468	2 0 26.4	13.799
5	22 28 52.39	1.8219	8 46 46.9	13.492	5	23 53 47.72	1.7472	2 14 14.1	13.790
6	22 30 41.60	1.8184	8 33 16.7	13.514	6	23 55 32.56	1.7475	2 28 1.2	13.780
7	22 32 30.60	1.8151	8 19 45.2	13.536	7	23 57 17.42	1.7479	2 41 47.7	13.769
8	22 34 19.41	1.8118	8 6 12.4	13.557	8	23 59 2.31	1.7485	2 55 33.5	13.758
9	22 36 8.02	1.8086	7 52 38.3	13.578	9	0 0 47.24	1.7491	3 9 18.7	13.746
10	22 37 56.44	1.8055	7 39 3.0	13.598	10	0 2 32.20	1.7497	3 23 3.1	13.733
11	22 39 44.68	1.8025	7 25 26.5	13.617	11	0 4 17.20	1.7505	3 36 46.7	13.721
12	22 41 32.74	1.7995	7 11 48.9	13.636	12	0 6 2.26	1.7514	3 50 29.6	13.707
13	22 43 20.62	1.7966	6 58 10.2	13.653	13	0 7 47.37	1.7523	4 4 11.6	13.692
14	22 45 8.33	1.7938	6 44 30.5	13.670	14	0 9 32.53	1.7532	4 17 52.7	13.677
15	22 46 55.88	1.7911	6 30 49.8	13.686	15	0 11 17.75	1.7542	4 31 32.9	13.662
16	22 48 43.27	1.7885	6 17 8.2	13.701	16	0 13 3.04	1.7554	4 45 12.1	13.645
17	22 50 30.50	1.7859	6 3 25.7	13.716	17	0 14 48.40	1.7567	4 58 50.3	13.628
18	22 52 17.58	1.7834	5 49 42.3	13.730	18	0 16 33.84	1.7580	5 12 27.5	13.611
19	22 54 4.51	1.7811	5 35 58.1	13.743	19	0 18 19.36	1.7593	5 26 3.6	13.592
20	22 55 51.31	1.7788	5 22 13.2	13.755	20	0 20 4.96	1.7607	5 39 38.6	13.573
21	22 57 37.97	1.7765	5 8 27.5	13.767	21	0 21 50.64	1.7622	5 53 12.4	13.553
22	22 59 24.49	1.7743	4 54 41.2	13.778	22	0 23 36.42	1.7638	6 6 45.0	13.533
23	23 1 10.89	1.7723	4 40 54.2	13.788	23	0 25 22.30	1.7655	6 20 16.3	13.512
24	23 2 57.17	1.7703	S. 4 27 6.6	13.797	24	0 27 8.28	1.7672	N. 6 33 46.4	13.490

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 5.					SUNDAY 7.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
0	0 27 8.28	1.7672	6 33 46.4	13.490	0	1 55 18.93	1.9377	16 42 14.3	11.550
1	0 28 54.36	1.7690	6 47 15.1	13.487	1	1 57 15.04	1.9377	16 53 45.5	11.489
2	0 30 40.56	1.7709	7 0 42.5	13.445	2	1 59 11.45	1.9427	17 5 13.0	11.426
3	0 32 26.87	1.7728	7 14 8.5	13.422	3	2 1 8.16	1.9478	17 16 36.6	11.362
4	0 34 13.30	1.7749	7 27 33.1	13.397	4	2 3 5.18	1.9530	17 27 56.4	11.297
5	0 35 59.86	1.7770	7 40 56.1	13.371	5	2 5 2.52	1.9582	17 39 12.3	11.232
6	0 37 46.54	1.7791	7 54 17.6	13.346	6	2 7 0.17	1.9635	17 50 24.2	11.165
7	0 39 33.35	1.7813	8 7 37.6	13.319	7	2 8 58.14	1.9688	18 1 32.1	11.097
8	0 41 20.30	1.7837	8 20 55.9	13.292	8	2 10 56.43	1.9741	18 12 35.9	11.028
9	0 43 7.40	1.7862	8 34 12.6	13.264	9	2 12 55.03	1.9794	18 23 35.5	10.958
10	0 44 54.64	1.7886	8 47 27.6	13.235	10	2 14 53.96	1.9849	18 34 30.9	10.887
11	0 46 42.03	1.7911	9 0 40.8	13.205	11	2 16 53.22	1.9904	18 45 22.0	10.816
12	0 48 29.58	1.7937	9 13 52.2	13.175	12	2 18 52.81	1.9959	18 56 8.8	10.743
13	0 50 17.28	1.7964	9 27 1.8	13.144	13	2 20 52.73	2.0015	19 6 51.2	10.669
14	0 52 5.14	1.7992	9 40 9.5	13.112	14	2 22 52.99	2.0072	19 17 29.1	10.593
15	0 53 53.18	1.8021	9 53 15.3	13.080	15	2 24 53.59	2.0128	19 28 2.4	10.517
16	0 55 41.39	1.8049	10 6 19.1	13.047	16	2 26 54.53	2.0185	19 38 31.1	10.440
17	0 57 29.77	1.8078	10 19 20.9	13.013	17	2 28 55.81	2.0242	19 48 55.2	10.362
18	0 59 18.33	1.8109	10 32 20.7	12.979	18	2 30 57.43	2.0299	19 59 14.5	10.282
19	1 1 7.08	1.8141	10 45 18.4	12.943	19	2 32 59.40	2.0357	20 9 29.0	10.201
20	1 2 56.02	1.8172	10 58 13.9	12.907	20	2 35 1.72	2.0416	20 19 38.6	10.119
21	1 4 45.14	1.8204	11 11 7.2	12.870	21	2 37 4.39	2.0474	20 29 43.3	10.037
22	1 6 34.46	1.8237	11 23 58.3	12.832	22	2 39 7.41	2.0533	20 39 43.0	9.953
23	1 8 23.98	1.8271	11 36 47.0	12.793	23	2 41 10.79	2.0593	20 49 37.6	9.868
SATURDAY 6.					MONDAY 8.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
0	1 10 13.71	1.8305	11 49 33.4	12.754	0	2 43 14.53	2.0653	20 59 27.1	9.782
1	1 12 3.64	1.8340	12 2 17.5	12.714	1	2 45 18.63	2.0712	21 9 11.4	9.694
2	1 13 53.79	1.8377	12 14 59.1	12.673	2	2 47 23.08	2.0772	21 18 50.4	9.605
3	1 15 44.16	1.8413	12 27 38.2	12.631	3	2 49 27.89	2.0832	21 28 24.0	9.515
4	1 17 34.75	1.8450	12 40 14.8	12.588	4	2 51 33.06	2.0892	21 37 52.2	9.424
5	1 19 25.56	1.8488	12 52 48.8	12.544	5	2 53 38.60	2.0953	21 47 14.9	9.332
6	1 21 16.61	1.8527	13 5 20.1	12.500	6	2 55 44.50	2.1013	21 56 32.1	9.239
7	1 23 7.89	1.8567	13 17 48.8	12.456	7	2 57 50.76	2.1074	22 5 43.6	9.145
8	1 24 59.41	1.8606	13 30 14.8	12.409	8	2 59 57.39	2.1136	22 14 49.5	9.050
9	1 26 51.16	1.8647	13 42 37.9	12.362	9	3 2 4.39	2.1197	22 23 49.6	8.952
10	1 28 43.16	1.8688	13 54 58.2	12.314	10	3 4 11.76	2.1258	22 32 43.8	8.854
11	1 30 35.41	1.8729	14 7 15.6	12.266	11	3 6 19.49	2.1319	22 41 32.1	8.756
12	1 32 27.91	1.8771	14 19 30.1	12.217	12	3 8 27.59	2.1381	22 50 14.5	8.656
13	1 34 20.66	1.8814	14 31 41.6	12.166	13	3 10 36.06	2.1442	22 58 50.8	8.554
14	1 36 13.68	1.8858	14 43 50.0	12.114	14	3 12 44.90	2.1504	23 7 21.0	8.452
15	1 38 6.96	1.8902	14 55 55.3	12.062	15	3 14 54.11	2.1566	23 15 45.0	8.347
16	1 40 0.51	1.8947	15 7 57.4	12.009	16	3 17 3.69	2.1627	23 24 2.7	8.242
17	1 41 54.33	1.8992	15 19 56.4	11.956	17	3 19 13.63	2.1688	23 32 14.1	8.136
18	1 43 48.42	1.9038	15 31 52.1	11.901	18	3 21 23.94	2.1749	23 40 19.0	8.028
19	1 45 42.79	1.9085	15 43 44.5	11.845	19	3 23 34.62	2.1811	23 48 17.5	7.920
20	1 47 37.44	1.9132	15 55 33.5	11.787	20	3 25 45.67	2.1872	23 56 9.4	7.810
21	1 49 32.38	1.9180	16 7 19.0	11.729	21	3 27 57.08	2.1933	24 3 54.7	7.699
22	1 51 27.60	1.9228	16 19 1.0	11.671	22	3 30 8.86	2.1994	24 11 33.3	7.587
23	1 53 23.12	1.9277	16 30 39.5	11.611	23	3 32 21.01	2.2055	24 19 5.1	7.473
24	1 55 18.93	1.9327	16 42 14.3	11.550	24	3 34 33.52	2.2115	24 26 30.1	7.359

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 9.					THURSDAY 11.				
0	3 34 33.52	2.2115	N. 24 26 30.1	7.339	0	5 26 46.14	2.4343	N. 27 46 50.7	0.623
1	3 36 46.39	2.2175	24 33 48.2	7.243	1	5 29 12.27	2.4367	27 47 23.3	0.463
2	3 38 59.62	2.2236	24 40 59.3	7.126	2	5 31 38.54	2.4388	27 47 46.3	0.302
3	3 41 13.22	2.2297	24 48 3.3	7.008	3	5 34 4.93	2.4408	27 47 59.6	+ 0.142
4	3 43 27.18	2.2356	24 55 0.2	6.889	4	5 36 31.44	2.4428	27 48 3.3	- 0.019
5	3 45 41.49	2.2414	25 1 50.0	6.769	5	5 38 58.07	2.4447	27 47 57.3	0.182
6	3 47 56.15	2.2473	25 8 32.5	6.647	6	5 41 24.81	2.4465	27 47 41.5	0.344
7	3 50 11.17	2.2532	25 15 7.6	6.524	7	5 43 51.65	2.4481	27 47 16.0	0.506
8	3 52 26.54	2.2591	25 21 35.3	6.400	8	5 46 18.58	2.4495	27 46 40.8	0.668
9	3 54 42.26	2.2648	25 27 55.6	6.275	9	5 48 45.59	2.4508	27 45 55.8	0.831
10	3 56 58.32	2.2705	25 34 8.3	6.149	10	5 51 12.68	2.4521	27 45 1.0	0.995
11	3 59 14.72	2.2762	25 40 13.4	6.022	11	5 53 39.84	2.4532	27 43 56.4	1.158
12	4 1 31.47	2.2819	25 46 10.9	5.893	12	5 56 7.06	2.4541	27 42 42.0	1.322
13	4 3 48.55	2.2875	25 52 0.6	5.763	13	5 58 34.33	2.4549	27 41 17.8	1.486
14	4 6 5.97	2.2931	25 57 42.5	5.632	14	6 1 1.65	2.4557	27 39 43.7	1.650
15	4 8 23.72	2.2986	26 3 16.5	5.500	15	6 3 29.01	2.4562	27 37 59.8	1.813
16	4 10 41.80	2.3040	26 8 42.5	5.367	16	6 5 56.39	2.4566	27 36 6.1	1.977
17	4 13 0.20	2.3094	26 14 0.6	5.234	17	6 8 23.80	2.4570	27 34 2.5	2.142
18	4 15 18.93	2.3148	26 19 10.6	5.098	18	6 10 51.23	2.4572	27 31 49.1	2.306
19	4 17 37.98	2.3200	26 24 12.4	4.962	19	6 13 18.67	2.4573	27 29 25.8	2.470
20	4 19 57.33	2.3251	26 29 6.1	4.826	20	6 15 46.11	2.4572	27 26 52.7	2.633
21	4 22 16.99	2.3302	26 33 51.5	4.687	21	6 18 13.53	2.4569	27 24 9.8	2.797
22	4 24 36.96	2.3353	26 38 28.6	4.548	22	6 20 40.94	2.4566	27 21 17.0	2.961
23	4 26 57.23	2.3405	N. 26 42 57.3	4.407	23	6 23 8.33	2.4562	N. 27 18 14.4	3.125
WEDNESDAY 10.					FRIDAY 12.				
0	4 29 17.80	2.3458	N. 26 47 17.5	4.266	0	6 25 35.69	2.4557	N. 27 15 2.0	3.289
1	4 31 38.66	2.3504	26 51 29.2	4.124	1	6 28 3.01	2.4550	27 11 39.7	3.452
2	4 33 59.81	2.3547	26 55 32.4	3.981	2	6 30 30.29	2.4542	27 8 7.7	3.615
3	4 36 21.23	2.3593	26 59 26.9	3.837	3	6 32 57.52	2.4533	27 4 25.9	3.778
4	4 38 42.93	2.3639	27 3 12.8	3.692	4	6 35 24.69	2.4522	27 0 34.3	3.941
5	4 41 4.90	2.3684	27 6 50.0	3.546	5	6 37 51.79	2.4511	26 56 33.0	4.105
6	4 43 27.14	2.3728	27 10 18.3	3.398	6	6 40 18.82	2.4498	26 52 21.9	4.268
7	4 45 49.64	2.3772	27 13 37.8	3.251	7	6 42 45.77	2.4485	26 48 1.1	4.432
8	4 48 12.40	2.3813	27 16 48.4	3.102	8	6 45 12.64	2.4470	26 43 30.6	4.595
9	4 50 35.40	2.3853	27 19 50.1	2.953	9	6 47 39.41	2.4453	26 38 50.5	4.759
10	4 52 58.64	2.3895	27 22 42.8	2.802	10	6 50 6.08	2.4436	26 34 0.7	4.922
11	4 55 22.12	2.3933	27 25 26.4	2.651	11	6 52 32.65	2.4418	26 29 1.3	5.086
12	4 57 45.84	2.3972	27 28 0.9	2.499	12	6 54 59.10	2.4398	26 23 52.4	5.250
13	5 0 9.78	2.4008	27 30 26.3	2.347	13	6 57 25.43	2.4378	26 18 33.9	5.413
14	5 2 33.94	2.4044	27 32 42.5	2.195	14	6 59 51.64	2.4357	26 13 5.9	5.577
15	5 4 58.31	2.4079	27 34 49.5	2.043	15	7 2 17.72	2.4335	26 7 28.3	5.740
16	5 7 22.89	2.4113	27 36 47.2	1.891	16	7 4 43.66	2.4312	26 1 41.3	5.904
17	5 9 47.67	2.4147	27 38 35.6	1.739	17	7 7 9.46	2.4287	25 55 44.9	6.068
18	5 12 12.64	2.4179	27 40 14.7	1.587	18	7 9 35.10	2.4262	25 49 39.2	6.232
19	5 14 37.80	2.4208	27 41 44.4	1.436	19	7 12 0.59	2.4235	25 43 24.1	6.396
20	5 17 3.14	2.4237	27 43 4.6	1.285	20	7 14 25.92	2.4208	25 36 59.7	6.560
21	5 19 28.65	2.4266	27 44 15.4	1.134	21	7 16 51.09	2.4181	25 30 26.1	6.724
22	5 21 54.33	2.4295	27 45 16.7	0.982	22	7 19 16.09	2.4152	25 23 43.3	6.888
23	5 24 20.16	2.4323	27 46 8.5	0.831	23	7 21 40.91	2.4122	25 16 51.3	7.052
24	5 26 46.14	2.4351	N. 27 46 50.7	0.679	24	7 24 5.55	2.4091	N. 25 9 50.1	7.216

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 13.					MONDAY 15.				
0	7 24 5.55	2.4091	N. 25 9 50.1	7.095	0	9 15 15.62	2.2154	N. 16 53 41.8	13.130
1	7 26 30.00	2.4099	25 2 39.9	7.245	1	9 17 28.42	2.2114	16 40 31.1	13.226
2	7 28 54.26	2.4097	24 55 20.7	7.395	2	9 19 40.99	2.2075	16 27 14.7	13.320
3	7 31 18.33	2.3995	24 47 52.5	7.545	3	9 21 53.32	2.2035	16 13 52.7	13.412
4	7 33 42.20	2.3961	24 40 15.3	7.693	4	9 24 5.41	2.1996	16 0 25.2	13.503
5	7 36 5.86	2.3927	24 32 29.3	7.840	5	9 26 17.27	2.1957	15 46 52.3	13.593
6	7 38 29.32	2.3892	24 24 34.5	7.987	6	9 28 28.89	2.1918	15 33 14.0	13.682
7	7 40 52.57	2.3857	24 16 30.9	8.132	7	9 30 40.28	2.1880	15 19 30.4	13.770
8	7 43 15.60	2.3820	24 8 18.6	8.277	8	9 32 51.45	2.1843	15 5 41.6	13.856
9	7 45 38.41	2.3783	23 59 57.7	8.420	9	9 35 2.40	2.1807	14 51 47.7	13.940
10	7 48 1.00	2.3746	23 51 28.2	8.563	10	9 37 13.13	2.1770	14 37 48.8	14.023
11	7 50 23.36	2.3708	23 42 50.1	8.705	11	9 39 23.64	2.1733	14 23 44.9	14.105
12	7 52 45.49	2.3669	23 34 3.6	8.845	12	9 41 33.93	2.1697	14 9 36.2	14.185
13	7 55 7.39	2.3631	23 25 8.7	8.985	13	9 43 44.01	2.1662	13 55 22.7	14.264
14	7 57 29.06	2.3592	23 16 5.4	9.124	14	9 45 53.88	2.1628	13 41 4.5	14.342
15	7 59 50.49	2.3552	23 6 53.8	9.262	15	9 48 3.55	2.1595	13 26 41.6	14.419
16	8 2 11.68	2.3512	22 57 34.0	9.398	16	9 50 13.02	2.1562	13 12 14.2	14.494
17	8 4 32.63	2.3471	22 48 6.1	9.533	17	9 52 22.29	2.1528	12 57 42.3	14.567
18	8 6 53.33	2.3429	22 38 30.1	9.668	18	9 54 31.36	2.1496	12 43 6.1	14.639
19	8 9 13.78	2.3388	22 28 46.0	9.801	19	9 56 40.24	2.1465	12 28 25.6	14.711
20	8 11 33.99	2.3347	22 18 54.0	9.932	20	9 58 48.94	2.1434	12 13 40.8	14.781
21	8 13 53.95	2.3305	22 8 54.1	10.065	21	10 0 57.45	2.1403	11 58 51.9	14.848
22	8 16 13.65	2.3263	21 58 46.4	10.195	22	10 3 5.78	2.1373	11 43 59.0	14.915
23	8 18 33.10	2.3221	N. 21 48 31.0	10.322	23	10 5 13.93	2.1344	N. 11 29 2.1	14.981
SUNDAY 14.					TUESDAY 16.				
0	8 20 52.30	2.3178	N. 21 38 7.8	10.450	0	10 7 21.91	2.1316	N. 11 14 1.3	15.045
1	8 23 11.24	2.3135	21 27 37.0	10.576	1	10 9 29.72	2.1288	10 58 56.7	15.107
2	8 25 29.92	2.3093	21 16 58.7	10.700	2	10 11 37.37	2.1262	10 43 48.4	15.168
3	8 27 48.35	2.3050	21 6 13.0	10.823	3	10 13 44.86	2.1235	10 28 36.5	15.228
4	8 30 6.52	2.3005	20 55 19.9	10.946	4	10 15 52.19	2.1209	10 13 21.0	15.287
5	8 32 24.42	2.2963	20 44 19.4	11.068	5	10 17 59.37	2.1185	9 58 2.0	15.345
6	8 34 42.07	2.2920	20 33 11.7	11.188	6	10 20 6.41	2.1161	9 42 39.6	15.401
7	8 36 59.46	2.2877	20 21 56.9	11.307	7	10 22 13.30	2.1137	9 27 13.9	15.455
8	8 39 16.59	2.2833	20 10 34.9	11.425	8	10 24 20.05	2.1114	9 11 45.0	15.508
9	8 41 33.46	2.2789	19 59 5.9	11.541	9	10 26 26.67	2.1093	8 56 12.9	15.560
10	8 43 50.06	2.2746	19 47 30.0	11.655	10	10 28 33.16	2.1072	8 40 37.8	15.610
11	8 46 6.41	2.2703	19 35 47.3	11.769	11	10 30 39.53	2.1051	8 24 59.7	15.659
12	8 48 22.50	2.2660	19 23 57.7	11.882	12	10 32 45.77	2.1031	8 9 18.7	15.707
13	8 50 38.33	2.2617	19 12 1.4	11.993	13	10 34 51.90	2.1012	7 53 34.9	15.753
14	8 52 53.90	2.2573	18 59 58.5	12.108	14	10 36 57.92	2.0994	7 37 48.3	15.798
15	8 55 9.21	2.2531	18 47 49.1	12.211	15	10 39 3.83	2.0977	7 21 59.1	15.841
16	8 57 24.27	2.2488	18 35 33.2	12.319	16	10 41 9.64	2.0960	7 6 7.4	15.883
17	8 59 39.07	2.2445	18 23 10.8	12.426	17	10 43 15.35	2.0944	6 50 13.1	15.925
18	9 1 53.61	2.2403	18 10 42.1	12.530	18	10 45 20.97	2.0929	6 34 16.4	15.964
19	9 4 7.90	2.2361	17 58 7.2	12.633	19	10 47 26.50	2.0915	6 18 17.4	16.002
20	9 6 21.94	2.2319	17 45 26.2	12.735	20	10 49 31.95	2.0903	6 2 16.2	16.038
21	9 8 35.73	2.2276	17 32 39.0	12.837	21	10 51 37.33	2.0891	5 46 12.8	16.073
22	9 10 49.27	2.2232	17 19 45.8	12.936	22	10 53 42.64	2.0879	5 30 7.4	16.108
23	9 13 2.57	2.2196	17 6 46.7	13.033	23	10 55 47.87	2.0867	5 13 59.9	16.141
24	9 15 15.62	2.2154	N. 16 53 41.8	13.130	24	10 57 53.04	2.0858	N. 4 57 50.5	16.172

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 17.					FRIDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	10 57 53.04	2.0858	N. 4 57 50.5	16.172	0	12 38 31.67	2.1420	S. 8 7 41.2	16.006
1	10 59 58.16	2.0849	4 41 39.3	16.202	1	12 40 40.29	2.1453	8 23 40.4	15.966
2	11 2 3.23	2.0840	4 25 26.3	16.230	2	12 42 49.11	2.1487	8 39 37.1	15.924
3	11 4 8.24	2.0832	4 9 11.7	16.257	3	12 44 58.14	2.1522	8 55 31.3	15.882
4	11 6 13.21	2.0826	3 52 55.5	16.283	4	12 47 7.38	2.1558	9 11 22.9	15.838
5	11 8 18.15	2.0821	3 36 37.8	16.307	5	12 49 16.84	2.1595	9 27 11.8	15.792
6	11 10 23.06	2.0816	3 20 18.7	16.329	6	12 51 26.52	2.1633	9 42 57.9	15.744
7	11 12 27.94	2.0812	3 3 58.3	16.351	7	12 53 36.43	2.1671	9 58 41.1	15.695
8	11 14 32.80	2.0809	2 47 36.6	16.372	8	12 55 46.57	2.1709	10 14 21.3	15.644
9	11 16 37.65	2.0807	2 31 13.7	16.390	9	12 57 56.94	2.1748	10 29 58.4	15.592
10	11 18 42.49	2.0806	2 14 49.8	16.407	10	13 0 7.55	2.1789	10 45 32.3	15.538
11	11 20 47.32	2.0805	1 58 24.9	16.423	11	13 2 18.41	2.1831	11 1 3.0	15.483
12	11 22 52.15	2.0805	1 41 59.0	16.438	12	13 4 29.52	2.1873	11 16 30.3	15.426
13	11 24 56.99	2.0807	1 25 32.3	16.451	13	13 6 40.89	2.1916	11 31 54.1	15.367
14	11 27 1.84	2.0809	1 9 4.9	16.462	14	13 8 52.51	2.1959	11 47 14.4	15.307
15	11 29 6.70	2.0812	0 52 36.8	16.473	15	13 11 4.39	2.2003	12 2 31.0	15.245
16	11 31 11.59	2.0816	0 36 8.1	16.482	16	13 13 16.54	2.2048	12 17 43.8	15.181
17	11 33 16.50	2.0821	0 19 38.9	16.490	17	13 15 28.97	2.2094	12 32 52.7	15.116
18	11 35 21.44	2.0827	N. 0 3 9.3	16.496	18	13 17 41.07	2.2140	12 47 57.7	15.049
19	11 37 26.42	2.0834	S. 0 13 20.6	16.501	19	13 19 54.65	2.2187	13 2 58.6	14.980
20	11 39 31.45	2.0842	0 29 50.8	16.504	20	13 22 7.92	2.2235	13 17 55.3	14.910
21	11 41 36.52	2.0850	0 46 21.1	16.506	21	13 24 21.47	2.2283	13 32 47.8	14.838
22	11 43 41.65	2.0860	1 2 51.5	16.507	22	13 26 35.31	2.2332	13 47 35.9	14.765
23	11 45 46.84	2.0870	S. 1 19 21.9	16.505	23	13 28 49.45	2.2382	S. 14 2 19.6	14.690
THURSDAY 18.					SATURDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	11 47 52.00	2.0882	S. 1 35 52.1	16.502	0	13 31 3.89	2.2432	S. 14 16 58.7	14.613
1	11 49 57.42	2.0894	1 52 22.2	16.499	1	13 33 18.63	2.2482	14 31 33.2	14.535
2	11 52 2.82	2.0907	2 8 52.0	16.494	2	13 35 33.68	2.2533	14 46 2.9	14.454
3	11 54 8.30	2.0921	2 25 21.5	16.487	3	13 37 49.03	2.2585	15 0 27.7	14.372
4	11 56 13.87	2.0936	2 41 50.5	16.479	4	13 40 4.70	2.2638	15 14 47.5	14.288
5	11 58 19.53	2.0951	2 58 19.0	16.469	5	13 42 20.69	2.2691	15 29 2.3	14.203
6	12 0 25.28	2.0965	3 14 46.8	16.458	6	13 44 36.99	2.2744	15 43 11.9	14.116
7	12 2 31.14	2.0980	3 31 13.9	16.446	7	13 46 53.62	2.2798	15 57 16.2	14.027
8	12 4 37.11	2.1004	3 47 40.3	16.432	8	13 49 10.57	2.2852	16 11 15.2	13.937
9	12 6 43.10	2.1023	4 4 5.8	16.417	9	13 51 27.84	2.2906	16 25 8.7	13.845
10	12 8 49.39	2.1044	4 20 30.3	16.399	10	13 53 45.44	2.2962	16 38 56.6	13.751
11	12 10 55.72	2.1065	4 36 53.7	16.381	11	13 56 3.38	2.3017	16 52 38.8	13.656
12	12 13 2.17	2.1087	4 53 16.0	16.362	12	13 58 21.05	2.3073	17 6 15.3	13.559
13	12 15 8.76	2.1110	5 9 37.1	16.340	13	14 0 40.26	2.3130	17 19 45.9	13.460
14	12 17 15.40	2.1134	5 25 56.8	16.317	14	14 2 59.21	2.3187	17 33 10.5	13.359
15	12 19 22.37	2.1159	5 42 15.1	16.292	15	14 5 18.50	2.3243	17 46 29.0	13.255
16	12 21 29.40	2.1184	5 58 31.9	16.267	16	14 7 38.13	2.3301	17 59 41.3	13.153
17	12 23 36.58	2.1210	6 14 47.1	16.239	17	14 9 58.11	2.3358	18 12 47.3	13.047
18	12 25 43.92	2.1236	6 31 0.6	16.210	18	14 12 18.43	2.3416	18 25 46.9	12.939
19	12 27 51.43	2.1262	6 47 12.3	16.180	19	14 14 39.10	2.3474	18 38 40.0	12.830
20	12 29 59.12	2.1286	7 3 22.2	16.148	20	14 17 0.12	2.3532	18 51 26.5	12.719
21	12 32 6.08	2.1312	7 19 30.1	16.115	21	14 19 21.40	2.3591	19 4 6.3	12.607
22	12 34 15.02	2.1336	7 35 36.0	16.080	22	14 21 43.21	2.3650	19 16 39.3	12.493
23	12 36 23.25	2.1362	7 51 30.7	16.043	23	14 24 5.28	2.3709	19 29 5.4	12.377
24	12 38 31.67	2.1420	S. 8 7 41.2	16.006	24	14 26 27.70	2.3768	S. 10 41 24.5	12.259

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 21.					TUESDAY 23.				
0	14 26 27.70	2.3767	S. 19 41 24.5	12.299	0	16 26 43.05	2.6062	S. 26 44 42.1	4.864
1	14 28 50.48	2.3826	19 53 36.5	12.140	1	16 29 19.49	2.6085	26 49 28.5	4.682
2	14 31 13.61	2.3884	20 5 41.3	12.018	2	16 31 56.07	2.6107	26 54 4.0	4.500
3	14 33 37.09	2.3943	20 17 38.7	11.895	3	16 34 32.78	2.6128	26 58 28.5	4.317
4	14 36 0.92	2.4002	20 29 28.7	11.772	4	16 37 9.61	2.6147	27 2 42.0	4.133
5	14 38 25.11	2.4061	20 41 11.3	11.646	5	16 39 46.54	2.6165	27 6 44.5	3.949
6	14 40 49.65	2.4119	20 52 46.2	11.518	6	16 42 23.57	2.6179	27 10 35.9	3.765
7	14 43 14.54	2.4177	21 4 13.4	11.388	7	16 45 0.69	2.6193	27 14 16.3	3.580
8	14 45 39.78	2.4236	21 15 32.8	11.257	8	16 47 37.89	2.6206	27 17 45.5	3.394
9	14 48 5.37	2.4294	21 26 44.2	11.124	9	16 50 15.16	2.6217	27 21 3.6	3.209
10	14 50 31.31	2.4352	21 37 47.6	10.990	10	16 52 52.49	2.6226	27 24 10.6	3.023
11	14 52 57.60	2.4410	21 48 43.0	10.855	11	16 55 29.87	2.6233	27 27 6.4	2.837
12	14 55 24.23	2.4467	21 59 30.2	10.717	12	16 58 7.29	2.6239	27 29 51.0	2.650
13	14 57 51.20	2.4524	22 10 9.1	10.578	13	17 0 44.74	2.6243	27 32 24.4	2.463
14	15 0 18.52	2.4582	22 20 39.6	10.437	14	17 3 22.21	2.6247	27 34 46.6	2.277
15	15 2 46.18	2.4638	22 31 1.6	10.295	15	17 5 59.70	2.6248	27 36 57.7	2.091
16	15 5 14.18	2.4694	22 41 15.0	10.152	16	17 8 37.19	2.6247	27 38 57.6	1.904
17	15 7 42.51	2.4749	22 51 19.8	10.007	17	17 11 14.66	2.6243	27 40 46.2	1.717
18	15 10 11.17	2.4804	23 1 15.8	9.860	18	17 13 52.11	2.6239	27 42 23.6	1.530
19	15 12 40.16	2.4859	23 11 3.0	9.712	19	17 16 29.53	2.6233	27 43 49.8	1.343
20	15 15 9.48	2.4913	23 20 41.3	9.562	20	17 19 6.91	2.6226	27 45 4.8	1.157
21	15 17 39.12	2.4967	23 30 10.5	9.411	21	17 21 44.24	2.6217	27 46 8.6	0.970
22	15 20 9.08	2.5019	23 39 30.6	9.258	22	17 24 21.51	2.6206	27 47 1.2	0.783
23	15 22 39.35	2.5071	S. 23 48 41.5	9.104	23	17 26 58.71	2.6193	S. 27 47 42.6	0.597
MONDAY 22.					WEDNESDAY 24.				
0	15 25 9.93	2.5122	S. 23 57 43.1	8.948	0	17 29 35.82	2.6178	S. 27 48 12.9	0.412
1	15 27 40.82	2.5173	24 6 35.3	8.792	1	17 32 12.84	2.6162	27 48 32.1	0.227
2	15 30 12.01	2.5223	24 15 18.1	8.634	2	17 34 49.76	2.6143	27 48 40.1	- 0.041
3	15 32 43.50	2.5273	24 23 51.4	8.475	3	17 37 26.56	2.6123	27 48 37.0	+ 0.144
4	15 35 15.29	2.5321	24 32 15.1	8.314	4	17 40 3.24	2.6103	27 48 22.8	0.328
5	15 37 47.36	2.5368	24 40 29.1	8.152	5	17 42 39.79	2.6080	27 47 57.6	0.512
6	15 40 19.71	2.5415	24 48 33.3	7.988	6	17 45 16.20	2.6055	27 47 21.4	0.695
7	15 42 52.34	2.5461	24 56 27.6	7.823	7	17 47 52.45	2.6028	27 46 34.2	0.878
8	15 45 25.24	2.5505	25 4 12.1	7.658	8	17 50 28.54	2.6001	27 45 36.0	1.061
9	15 47 58.40	2.5549	25 11 46.6	7.492	9	17 53 4.46	2.5972	27 44 26.9	1.242
10	15 50 31.82	2.5592	25 19 11.1	7.323	10	17 55 40.20	2.5940	27 43 7.0	1.423
11	15 53 5.50	2.5633	25 26 25.4	7.153	11	17 58 15.74	2.5907	27 41 36.2	1.605
12	15 55 39.42	2.5673	25 33 29.5	6.982	12	18 0 51.08	2.5872	27 39 54.6	1.782
13	15 58 13.58	2.5712	25 40 23.3	6.811	13	18 3 26.21	2.5837	27 38 2.3	1.961
14	16 0 47.97	2.5751	25 47 6.8	6.639	14	18 6 1.12	2.5800	27 35 59.3	2.139
15	16 3 22.59	2.5788	25 53 40.0	6.466	15	18 8 35.81	2.5762	27 33 45.6	2.317
16	16 5 57.43	2.5824	26 0 2.7	6.291	16	18 11 10.26	2.5721	27 31 21.3	2.493
17	16 8 32.48	2.5858	26 6 14.9	6.116	17	18 13 44.46	2.5678	27 28 46.5	2.668
18	16 11 7.73	2.5892	26 12 16.6	5.940	18	18 16 18.40	2.5635	27 26 1.2	2.842
19	16 13 43.18	2.5923	26 18 7.7	5.762	19	18 18 52.08	2.5591	27 23 5.5	3.015
20	16 16 18.81	2.5953	26 23 48.1	5.584	20	18 21 25.49	2.5545	27 19 59.4	3.187
21	16 18 54.62	2.5983	26 29 17.8	5.405	21	18 23 58.62	2.5497	27 16 43.0	3.358
22	16 21 30.60	2.6011	26 34 36.7	5.225	22	18 26 31.46	2.5449	27 13 16.4	3.528
23	16 24 6.75	2.6037	26 39 44.8	5.045	23	18 29 4.01	2.5399	27 9 39.6	3.697
24	16 26 43.05	2.6062	S. 26 44 42.1	4.864	24	18 31 36.25	2.5347	S. 27 5 52.7	3.866

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 25.					SATURDAY 27.				
0	18 31 36.25	2.5347	S. 27 5 52.7	3.866	0	20 25 43.07	2.2022	S. 21 12 48.5	10.267
1	18 34 8.18	2.5395	27 1 55.7	4.033	1	20 27 54.98	2.1947	21 2 29.6	10.362
2	18 36 39.79	2.5241	26 57 48.8	4.198	2	20 30 6.44	2.1872	20 52 5.0	10.456
3	18 39 11.07	2.5186	26 53 32.0	4.363	3	20 32 17.45	2.1798	20 41 34.9	10.548
4	18 41 42.02	2.5130	26 49 5.3	4.526	4	20 34 28.02	2.1725	20 30 59.3	10.639
5	18 44 12.63	2.5072	26 44 28.9	4.687	5	20 36 38.15	2.1652	20 20 18.2	10.730
6	18 46 42.89	2.5014	26 39 42.8	4.848	6	20 38 47.85	2.1580	20 9 31.7	10.818
7	18 49 12.80	2.4955	26 34 47.1	5.007	7	20 40 57.11	2.1507	19 58 40.0	10.904
8	18 51 42.35	2.4895	26 29 41.9	5.166	8	20 43 5.93	2.1434	19 47 43.2	10.989
9	18 54 11.54	2.4834	26 24 27.2	5.323	9	20 45 14.31	2.1361	19 36 41.3	11.073
10	18 56 40.36	2.4771	26 19 3.1	5.478	10	20 47 22.26	2.1289	19 25 34.4	11.156
11	18 59 8.80	2.4707	26 13 29.8	5.632	11	20 49 29.79	2.1220	19 14 22.6	11.236
12	19 1 36.85	2.4643	26 7 47.3	5.784	12	20 51 36.90	2.1149	19 3 6.1	11.314
13	19 4 4.52	2.4579	26 1 55.7	5.936	13	20 53 43.58	2.1078	18 51 44.9	11.392
14	19 6 31.80	2.4513	25 55 55.0	6.086	14	20 55 49.84	2.1008	18 40 19.0	11.470
15	19 8 58.68	2.4447	25 49 45.4	6.234	15	20 57 55.68	2.0939	18 28 48.5	11.545
16	19 11 25.16	2.4379	25 43 26.9	6.381	16	21 0 1.11	2.0870	18 17 13.6	11.618
17	19 13 51.23	2.4311	25 36 59.7	6.526	17	21 2 6.12	2.0801	18 5 34.3	11.691
18	19 16 16.89	2.4242	25 30 23.8	6.670	18	21 4 10.72	2.0733	17 53 50.7	11.768
19	19 18 42.13	2.4173	25 23 39.3	6.813	19	21 6 14.91	2.0666	17 42 2.9	11.831
20	19 21 6.96	2.4103	25 16 46.2	6.954	20	21 8 18.71	2.0600	17 30 11.0	11.899
21	19 23 31.37	2.4032	25 9 44.8	7.093	21	21 10 22.11	2.0534	17 18 15.0	11.966
22	19 25 55.35	2.3961	25 2 35.1	7.231	22	21 12 25.12	2.0468	17 6 15.1	12.031
23	19 28 18.90	2.3890	S. 24 55 17.1	7.368	23	21 14 27.73	2.0402	S. 16 54 11.3	12.096
FRIDAY 26.					SUNDAY 28.				
0	19 30 42.03	2.3818	S. 24 47 51.0	7.503	0	21 16 29.95	2.0338	S. 16 42 3.6	12.159
1	19 33 4.72	2.3745	24 40 16.8	7.636	1	21 18 31.79	2.0275	16 29 52.2	12.221
2	19 35 26.97	2.3672	24 32 34.7	7.767	2	21 20 33.25	2.0211	16 17 37.1	12.281
3	19 37 48.78	2.3598	24 24 44.8	7.897	3	21 22 34.32	2.0148	16 5 18.5	12.339
4	19 40 10.15	2.3525	24 16 47.1	8.026	4	21 24 35.02	2.0087	15 52 56.4	12.397
5	19 42 31.08	2.3451	24 8 41.7	8.153	5	21 26 35.36	2.0026	15 40 30.8	12.454
6	19 44 51.56	2.3376	24 0 28.8	8.278	6	21 28 35.33	1.9965	15 28 1.9	12.509
7	19 47 11.59	2.3302	23 52 8.4	8.402	7	21 30 34.94	1.9905	15 15 29.7	12.563
8	19 49 31.18	2.3227	23 43 40.6	8.525	8	21 32 34.19	1.9845	15 2 54.3	12.617
9	19 51 50.32	2.3152	23 35 5.4	8.646	9	21 34 33.08	1.9786	14 50 15.7	12.668
10	19 54 9.01	2.3077	23 26 23.1	8.764	10	21 36 31.62	1.9728	14 37 34.1	12.718
11	19 56 27.24	2.3001	23 17 33.7	8.882	11	21 38 29.82	1.9671	14 24 49.5	12.768
12	19 58 45.02	2.2926	23 8 37.3	8.997	12	21 40 27.67	1.9614	14 12 1.9	12.817
13	20 1 2.35	2.2851	22 59 34.0	9.112	13	21 42 25.18	1.9558	13 59 11.5	12.863
14	20 3 19.23	2.2775	22 50 23.9	9.225	14	21 44 22.37	1.9504	13 46 18.3	12.909
15	20 5 35.65	2.2699	22 41 7.0	9.337	15	21 46 19.23	1.9449	13 33 22.4	12.954
16	20 7 51.62	2.2623	22 31 43.5	9.446	16	21 48 15.76	1.9395	13 20 23.8	12.997
17	20 10 7.13	2.2547	22 22 13.5	9.553	17	21 50 11.97	1.9343	13 7 22.7	13.039
18	20 12 22.19	2.2472	22 12 37.1	9.660	18	21 52 7.87	1.9291	12 54 19.1	13.080
19	20 14 36.80	2.2397	22 2 54.3	9.765	19	21 54 3.46	1.9239	12 41 13.1	13.121
20	20 16 50.96	2.2322	21 53 5.3	9.868	20	21 55 58.74	1.9188	12 28 4.6	13.161
21	20 19 4.66	2.2246	21 43 10.1	9.971	21	21 57 53.71	1.9137	12 14 53.8	13.199
22	20 21 17.91	2.2171	21 33 8.8	10.071	22	21 59 48.38	1.9088	12 1 40.8	13.236
23	20 23 30.71	2.2095	21 23 1.6	10.169	23	22 1 42.76	1.9040	11 48 25.5	13.272
24	20 25 43.07	2.2022	S. 21 12 48.5	10.267	24	22 3 36.86	1.8992	S. 11 35 8.1	13.307

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 29.					WEDNESDAY, JULY 1.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 3 36.86	1.8992	S. 11 35 8.1	13.307	0	23 30 44.73	1.7617	S. 0 33 15.8	13.961
1	22 5 30.67	1.8943	11 21 48.7	13.341	PHASES OF THE MOON.				
2	22 7 24.20	1.8898	11 8 27.2	13.374					
3	22 9 17.45	1.8852	10 55 3.8	13.406					
4	22 11 10.43	1.8808	10 41 38.5	13.437					
5	22 13 3.15	1.8764	10 28 11.3	13.467					
6	22 14 55.60	1.8721	10 14 42.4	13.496					
7	22 16 47.80	1.8678	10 1 11.8	13.524					
8	22 18 39.74	1.8636	9 47 39.5	13.552					
9	22 20 31.43	1.8595	9 34 5.6	13.578					
10	22 22 22.88	1.8556	9 20 30.2	13.603					
11	22 24 14.10	1.8517	9 6 53.2	13.628	PHASES OF THE MOON.				
12	22 26 5.08	1.8478	8 53 14.8	13.651					
13	22 27 55.83	1.8440	8 39 35.1	13.673					
14	22 29 46.36	1.8403	8 25 54.0	13.696					
15	22 31 36.67	1.8367	8 12 11.6	13.717					
16	22 33 26.77	1.8332	7 58 28.0	13.737					
17	22 35 16.65	1.8296	7 44 43.2	13.756					
18	22 37 6.32	1.8262	7 30 57.3	13.774					
19	22 38 55.79	1.8229	7 17 10.3	13.791					
20	22 40 45.07	1.8198	7 3 22.3	13.809					
21	22 42 34.16	1.8167	6 49 33.4	13.823					
22	22 44 23.07	1.8136	6 35 43.5	13.839					
23	22 46 11.79	1.8105	S. 6 21 52.7	13.853					
TUESDAY 30.					☾ Apogee June 4 20.6 ☾ Perigee 20 3.3				
0	22 48 0.33	1.8076	S. 6 8 1.2	13.865					
1	22 49 48.70	1.8048	5 54 8.9	13.877					
2	22 51 36.91	1.8021	5 40 15.9	13.890					
3	22 53 24.95	1.7994	5 26 22.1	13.902					
4	22 55 12.83	1.7968	5 12 27.7	13.912					
5	22 57 0.56	1.7943	4 58 32.7	13.921					
6	22 58 48.15	1.7919	4 44 37.2	13.929					
7	23 0 35.59	1.7895	4 30 41.2	13.937					
8	23 2 22.89	1.7873	4 16 44.8	13.944					
9	23 4 10.06	1.7851	4 2 47.9	13.951					
10	23 5 57.10	1.7829	3 48 50.7	13.956					
11	23 7 44.01	1.7808	3 34 53.2	13.961					
12	23 9 30.80	1.7789	3 20 55.4	13.965					
13	23 11 17.48	1.7771	3 6 57.4	13.968					
14	23 13 4.05	1.7753	2 52 59.2	13.972					
15	23 14 50.51	1.7735	2 39 0.8	13.974					
16	23 16 36.87	1.7719	2 25 2.3	13.975					
17	23 18 23.14	1.7704	2 11 3.8	13.976					
18	23 20 9.32	1.7689	1 57 5.2	13.976					
19	23 21 55.41	1.7675	1 43 6.7	13.975					
20	23 23 41.42	1.7662	1 29 8.2	13.974					
21	23 25 27.35	1.7649	1 15 9.8	13.972					
22	23 27 13.21	1.7637	1 1 11.6	13.968					
23	23 28 59.00	1.7627	0 47 13.6	13.965					
24	23 30 44.73	1.7617	S. 0 33 15.8	13.961					

PHASES OF THE MOON.

		d	h	m
☾	Last Quarter	June	2 20	2.2
●	New Moon		10 20	42.8
☾	First Quarter		17 23	40.6
○	Full Moon		24 18	54.9

		d	h
☾	Apogee	June	4 20.6
☾	Perigee		20 3.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	SATURN W.	97 4 19	2897	98 36 42	2910	100 8 48	2923	101 40 38	2935
	Antares W.	72 39 22	2882	74 12 4	2894	75 44 30	2906	77 16 41	2919
	MARS E.	47 4 54	3183	45 38 25	3198	44 12 14	3214	42 46 21	3228
	α Arietis E.	75 34 26	2901	74 2 9	2914	72 30 8	2927	70 58 23	2939
	SUN E.	110 27 9	3251	109 2 0	3265	107 37 7	3278	106 12 30	3290
2	SATURN W.	109 16 5	2991	110 46 29	3001	112 16 40	3011	113 46 39	3021
	Antares W.	84 53 57	2972	86 24 45	2981	87 55 21	2990	89 25 46	2999
	MARS E.	35 41 13	3300	34 17 1	3314	32 53 6	3328	31 29 27	3343
	α Arietis E.	63 23 22	2995	61 53 3	3005	60 22 57	3015	58 53 3	3024
	SUN E.	99 12 53	3347	97 49 36	3357	96 26 30	3367	95 3 36	3376
3	Antares W.	96 55 22	3034	98 24 52	3041	99 54 14	3046	101 23 30	3050
	α Aquilæ W.	50 51 29	4323	51 58 0	4327	53 5 14	4334	54 13 8	4195
	α Arietis E.	51 26 14	3065	49 57 22	3072	48 28 38	3079	47 0 3	3085
	SUN E.	88 11 30	3425	86 49 30	3421	85 27 37	3426	84 5 50	3431
4	Antares W.	108 48 36	3067	110 17 26	3069	111 46 13	3070	113 14 59	3072
	α Aquilæ W.	60 1 8	4037	61 12 11	4011	62 23 40	3997	63 35 32	3965
	α Arietis E.	39 38 57	3114	38 11 4	3119	36 43 17	3124	35 15 36	3129
	SUN E.	77 18 14	3450	75 56 54	3453	74 35 37	3454	73 14 22	3455
5	α Aquilæ W.	69 40 4	3871	70 53 53	3835	72 7 59	3829	73 22 21	3825
	Fomalhaut W.	43 14 47	3779	44 30 11	3741	45 46 15	3705	47 2 57	3673
	SUN E.	66 28 17	3454	65 7 2	3454	63 45 46	3452	62 24 28	3449
6	α Aquilæ W.	79 37 40	3762	80 53 22	3750	82 9 16	3741	83 25 20	3730
	Fomalhaut W.	53 34 25	3538	54 54 7	3515	56 14 14	3494	57 34 45	3474
	SUN E.	55 37 7	3431	54 15 26	3427	52 53 40	3422	51 31 48	3417
7	α Aquilæ W.	89 48 8	3689	91 5 7	3682	92 22 13	3676	93 39 26	3669
	Fomalhaut W.	64 22 45	3382	65 45 22	3366	67 8 17	3350	68 31 31	3334
	α Pegasi W.	42 15 37	3453	43 36 54	3420	44 58 48	3390	46 21 16	3362
	SUN E.	44 40 55	3386	43 18 23	3380	41 55 44	3373	40 32 57	3366
8	α Aquilæ W.	100 6 52	3650	101 24 32	3649	102 42 13	3649	103 59 55	3649
	Fomalhaut W.	75 32 0	3263	76 56 55	3249	78 22 6	3236	79 47 33	3224
	α Pegasi W.	53 21 8	3242	54 46 25	3221	56 12 12	3201	57 38 20	3181
	MARS W.	32 15 38	3260	33 40 36	3247	35 5 50	3233	36 31 20	3219
	SUN E.	33 37 5	3333	32 13 32	3326	30 49 51	3320	29 26 3	3315
12	SUN W.	14 17 27	3153	15 44 33	3101	17 12 41	3062	18 41 37	3030
	Regulus E.	52 45 16	2604	51 6 26	2594	49 27 23	2585	47 48 7	2576
	Spica E.	106 47 50	2607	105 9 4	2597	103 30 5	2588	101 50 53	2578
13	SUN W.	26 14 34	2922	27 46 25	2906	29 18 36	2892	30 51 6	2877
	Spica E.	93 31 45	2534	91 51 19	2526	90 10 42	2517	88 29 53	2509
	SATURN E.	114 4 2	2559	112 24 10	2549	110 44 5	2540	109 3 47	2531
14	SUN W.	38 37 43	2479	40 11 46	2409	41 46 2	2399	43 20 31	2390
	Spica E.	80 3 1	2471	78 21 7	2463	76 39 2	2456	74 56 47	2449
	SATURN E.	100 39 19	2489	98 57 51	2482	97 16 13	2475	95 34 25	2467

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SATURN W.	103 12 13	2947	104 43 32	2958	106 14 37	2969	107 45 28	2981
	Antares W.	78 48 36	2930	80 20 17	2942	81 51 43	2952	83 22 56	2962
	MARS E.	41 20 45	3242	39 55 26	3258	38 30 25	3272	37 5 41	3286
	α Arietis E.	69 26 54	2951	67 55 40	2962	66 24 40	2973	64 53 54	2985
	SUN E.	104 48 7	3305	103 23 59	3314	102 0 4	3325	100 36 22	3337
2	SATURN W.	115 16 26	3030	116 46 2	3039	118 15 27	3047	119 44 41	3056
	Antares W.	90 56 0	3007	92 26 4	3014	93 55 59	3022	95 25 45	3029
	MARS E.	30 6 5	3358	28 43 0	3372	27 20 12	3388	25 57 42	3405
	α Arietis E.	57 23 20	3033	55 53 48	3042	54 24 27	3050	52 55 16	3057
	SUN E.	93 40 52	3385	92 18 18	3393	90 55 53	3400	89 33 37	3408
3	Antares W.	102 52 41	3055	104 21 46	3058	105 50 47	3062	107 19 43	3065
	α Aquilæ W.	55 21 39	4158	56 30 45	4185	57 40 23	4093	58 50 31	4064
	α Arietis E.	45 31 35	3091	44 3 15	3097	42 35 2	3103	41 6 56	3109
	SUN E.	82 44 9	3437	81 22 34	3440	80 1 3	3445	78 39 37	3447
4	Antares W.	114 43 43	3072	116 12 27	3073	117 41 10	3072	119 9 54	3071
	α Aquilæ W.	64 47 46	3944	66 0 21	3923	67 13 17	3905	68 26 32	3888
	α Arietis E.	33 48 1	3134	32 20 33	3139	30 53 11	3145	29 25 56	3151
	SUN E.	71 53 8	3456	70 31 55	3457	69 10 43	3456	67 49 30	3456
5	α Aquilæ W.	74 36 57	3811	75 51 48	3798	77 6 52	3785	78 22 10	3773
	Fomalhaut W.	48 20 13	3642	49 38 2	3614	50 56 21	3597	52 15 9	3568
	SUN E.	61 3 7	3446	59 41 43	3443	58 20 15	3439	56 58 43	3436
6	α Aquilæ W.	84 41 35	3721	85 58 0	3712	87 14 34	3704	88 31 17	3696
	Fomalhaut W.	58 55 38	3454	60 16 53	3435	61 38 30	3416	63 0 28	3400
	SUN E.	50 9 51	3411	48 47 47	3406	47 25 37	3400	46 3 20	3393
7	α Aquilæ W.	94 56 46	3664	96 14 11	3660	97 31 41	3656	98 49 15	3653
	Fomalhaut W.	69 55 3	3319	71 18 52	3305	72 42 58	3290	74 7 21	3276
	α Pegasi W.	47 44 16	3336	49 7 46	3310	50 31 46	3286	51 56 14	3264
	SUN E.	39 10 2	3359	37 46 59	3353	36 23 49	3346	35 0 31	3339
8	α Aquilæ W.	105 17 37	3650	106 35 17	3652	107 52 55	3656	109 10 29	3661
	Fomalhaut W.	81 13 14	3211	82 39 10	3199	84 5 20	3188	85 31 44	3176
	α Pegasi W.	59 4 52	3163	60 31 46	3144	61 59 2	3127	63 26 39	3110
	MARS W.	37 57 7	3205	39 23 10	3193	40 49 28	3179	42 16 2	3167
	SUN E.	28 2 9	3311	26 38 10	3308	25 14 6	3305	23 50 0	3304
12	SUN W.	20 11 12	3003	21 41 21	2979	23 12 0	2958	24 43 5	2939
	Regulus E.	46 8 39	2566	44 28 58	2558	42 49 5	2549	41 9 0	2540
	Spica E.	100 11 28	2569	98 31 51	2560	96 52 1	2551	95 11 59	2543
13	SUN W.	32 23 54	2864	33 56 59	2852	35 30 19	2841	37 3 54	2830
	Spica E.	86 48 52	2501	85 7 40	2494	83 26 18	2486	81 44 45	2478
	SATURN E.	107 23 17	2522	105 42 35	2514	104 1 41	2506	102 20 36	2497
14	SUN W.	44 55 12	2781	46 30 5	2772	48 5 10	2763	49 40 26	2756
	Spica E.	73 14 22	2443	71 31 48	2436	69 49 4	2429	68 6 11	2422
	SATURN E.	93 52 26	2460	92 10 17	2454	90 27 59	2448	88 45 32	2441

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
15	SUN W.	51 15 52	2747	52 51 29	2739	54 27 17	2732	56 3 14	2725
	Spica E.	66 23 8	2416	64 39 56	2410	62 56 36	2404	61 13 7	2398
	SATURN E.	87 2 55	2434	85 20 9	2429	83 37 15	2423	81 54 13	2417
	Antares E.	112 15 17	2412	110 32 0	2406	108 48 34	2400	107 4 59	2394
16	SUN W.	64 5 22	2691	65 42 14	2684	67 19 15	2678	68 56 24	2672
	Pollux W.	38 37 31	2389	40 21 22	2381	42 5 24	2375	43 49 35	2368
	JUPITER W.	21 40 30	2427	23 23 26	2422	25 6 30	2416	26 49 42	2410
	Spica E.	52 33 37	2370	50 49 19	2365	49 4 54	2360	47 20 22	2355
	SATURN E.	73 17 3	2391	71 33 16	2387	69 49 22	2382	68 5 22	2378
	Antares E.	98 24 58	2365	96 40 33	2360	94 56 1	2355	93 11 21	2349
17	SUN W.	77 4 10	2644	78 42 5	2639	80 20 7	2634	81 58 16	2629
	Pollux W.	52 32 45	2339	54 17 48	2334	56 2 58	2328	57 48 16	2324
	JUPITER W.	35 27 38	2384	37 11 35	2380	38 55 39	2375	40 39 49	2371
	SATURN E.	59 23 59	2361	57 39 28	2359	55 54 54	2356	54 10 16	2355
	Antares E.	84 26 8	2324	82 40 44	2320	80 55 14	2315	79 9 37	2311
18	SUN W.	90 10 38	2607	91 49 24	2602	93 28 16	2599	95 7 13	2595
	Pollux W.	66 36 28	2302	68 22 25	2298	70 8 28	2294	71 54 37	2290
	JUPITER W.	49 22 16	2350	51 7 3	2346	52 51 56	2343	54 36 53	2339
	Regulus W.	29 37 13	2291	31 23 25	2287	33 9 43	2284	34 56 6	2281
	SATURN E.	45 26 41	2353	43 41 58	2353	41 57 16	2355	40 12 37	2359
	Antares E.	70 19 58	2291	68 33 45	2287	66 47 26	2283	65 1 2	2280
19	SUN W.	103 23 9	2579	105 2 33	2577	106 42 0	2574	108 21 30	2572
	Pollux W.	80 46 35	2274	82 33 12	2272	84 19 53	2270	86 6 37	2267
	JUPITER W.	63 22 53	2324	65 8 18	2322	66 53 46	2320	68 39 17	2317
	Regulus W.	43 49 13	2265	45 36 4	2263	47 22 58	2261	49 9 55	2258
	Antares E.	56 7 50	2265	54 20 59	2262	52 34 4	2260	50 47 6	2258
	α Aquilæ E.	107 42 31	3031	106 12 57	3014	104 43 2	3000	103 12 49	2987
20	SUN W.	116 39 38	2565	118 19 21	2565	119 59 4	2565	121 38 47	2565
	Pollux W.	95 1 0	2260	96 47 59	2260	98 34 58	2259	100 21 58	2259
	JUPITER W.	77 27 36	2310	79 13 21	2309	80 59 8	2308	82 44 56	2308
	Regulus W.	58 5 24	2251	59 52 36	2250	61 39 49	2249	63 27 3	2249
	Antares E.	41 51 36	2251	40 4 24	2250	38 17 11	2249	36 29 57	2249
	α Aquilæ E.	95 38 21	2946	94 7 0	2942	92 35 34	2939	91 4 4	2938
21	JUPITER W.	91 33 52	2311	93 19 36	2312	95 5 18	2313	96 50 58	2316
	Regulus W.	72 23 12	2251	74 10 23	2253	75 57 32	2255	77 44 38	2257
	α Aquilæ E.	83 26 50	2954	81 55 39	2961	80 24 37	2970	78 53 47	2981
	Fomalhaut E.	108 15 55	2601	106 37 1	2596	104 58 0	2592	103 18 54	2589
22	Regulus W.	86 39 15	2272	88 25 56	2275	90 12 32	2280	91 59 1	2285
	Spica W.	32 39 41	2282	34 26 7	2285	36 12 29	2288	37 58 46	2295
	α Aquilæ E.	71 23 41	3062	69 54 45	3084	68 26 16	3109	66 58 17	3135
	Fomalhaut E.	95 2 51	2590	93 23 42	2592	91 44 36	2596	90 5 35	2601
23	Regulus W.	100 49 31	2313	102 35 11	2321	104 20 40	2328	106 5 59	2336
	Spica W.	46 48 25	2320	48 33 56	2326	50 19 18	2333	52 4 30	2340
	α Aquilæ E.	59 47 29	3313	58 23 32	3358	57 0 28	3404	55 38 21	3462

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
15	SUN W.	57 39 21	2718	59 15 37	2710	60 52 3	2704	62 28 38	2697
	Spica E.	59 29 29	2392	57 45 43	2387	56 1 49	2381	54 17 47	2375
	SATURN E.	80 11 2	2411	78 27 43	2406	76 44 17	2401	75 0 44	2396
	Antares E.	105 21 16	2388	103 37 24	2382	101 53 23	2377	100 9 15	2371
16	SUN W.	70 33 42	2666	72 11 8	2660	73 48 41	2655	75 26 22	2649
	Pollux W.	45 33 56	2362	47 18 26	2356	49 3 4	2350	50 47 50	2344
	JUPITER W.	28 33 2	2405	30 16 30	2400	32 0 5	2394	33 43 48	2389
	Spica E.	45 35 42	2350	43 50 55	2346	42 6 2	2341	40 21 2	2337
	SATURN E.	66 21 16	2374	64 37 4	2371	62 52 47	2367	61 8 25	2364
	Antares E.	91 26 33	2344	89 41 38	2339	87 56 35	2334	86 11 25	2329
17	SUN W.	83 36 32	2624	85 14 54	2619	86 53 23	2615	88 31 58	2611
	Pollux W.	59 33 41	2319	61 19 13	2314	63 4 52	2310	64 50 37	2306
	JUPITER W.	42 24 6	2366	44 8 29	2362	45 52 59	2357	47 37 35	2354
	SATURN E.	52 25 36	2353	50 40 54	2352	48 56 10	2351	47 11 25	2354
	Antares E.	77 23 53	2307	75 38 3	2302	73 52 7	2298	72 6 5	2295
18	SUN W.	96 46 15	2591	98 25 22	2588	100 4 33	2585	101 43 49	2582
	Pollux W.	73 40 51	2287	75 27 10	2283	77 13 34	2281	79 0 2	2277
	JUPITER W.	56 21 56	2335	58 7 4	2333	59 52 16	2330	61 37 32	2326
	Regulus W.	36 42 34	2277	38 29 7	2274	40 15 45	2271	42 2 27	2268
	SATURN E.	38 28 3	2363	36 43 35	2368	34 59 15	2375	33 15 5	2385
	Antares E.	63 14 33	2277	61 27 59	2273	59 41 20	2270	57 54 37	2268
19	SUN W.	110 1 3	2570	111 40 39	2569	113 20 17	2567	114 59 57	2566
	Pollux W.	87 53 25	2266	89 40 15	2264	91 27 8	2262	93 14 3	2261
	JUPITER W.	70 24 52	2315	72 10 30	2313	73 56 10	2312	75 41 52	2311
	Regulus W.	50 56 56	2256	52 44 0	2255	54 31 6	2253	56 18 14	2252
	Antares E.	49 0 5	2256	47 13 1	2255	45 25 55	2253	43 38 46	2252
	α Aquilæ E.	101 42 20	2276	100 11 37	2265	98 40 41	2258	97 9 35	2251
20	SUN W.	123 18 30	2566	124 58 12	2566	126 37 53	2567	128 17 33	2569
	Pollux W.	102 8 58	2259	103 55 58	2259	105 42 58	2260	107 29 57	2261
	JUPITER W.	84 30 44	2308	86 16 32	2308	88 2 20	2309	89 48 7	2310
	Regulus W.	65 14 17	2249	67 1 32	2249	68 48 46	2249	70 36 0	2250
	Antares E.	34 42 43	2249	32 55 29	2249	31 8 15	2250	29 21 2	2250
	α Aquilæ E.	89 32 33	2238	88 1 2	2240	86 29 34	2242	84 58 9	2247
21	JUPITER W.	98 36 34	2318	100 22 7	2321	102 7 36	2324	103 53 1	2328
	Regulus W.	79 31 41	2259	81 18 41	2262	83 5 37	2265	84 52 28	2268
	α Aquilæ E.	77 23 10	2293	75 52 49	2297	74 22 45	2294	72 53 2	2292
	Fomalhaut E.	101 39 44	2587	100 0 31	2586	98 21 17	2586	96 42 3	2588
22	Regulus W.	93 45 23	2290	95 31 37	2295	97 17 44	2301	99 3 42	2307
	Spica W.	39 44 56	2297	41 31 0	2302	43 16 56	2307	45 2 45	2313
	α Aquilæ E.	65 30 50	2165	64 3 59	2197	62 37 46	2212	61 12 15	2270
	Fomalhaut E.	88 26 41	2606	86 47 54	2613	85 9 17	2621	83 30 50	2629
23	Regulus W.	107 51 6	2344	109 36 2	2352	111 20 46	2360	113 5 18	2370
	Spica W.	53 49 31	2348	55 34 21	2356	57 18 59	2365	59 3 24	2373
	α Aquilæ E.	54 17 14	2521	52 57 13	2586	51 38 23	2656	50 20 49	2733

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Fomalhaut E. α Pegasi E.	81 52 35 103 44 0	2598 2520	80 14 32 102 3 15	2549 2525	78 36 44 100 22 37	2560 2530	76 59 11 98 42 6	2572 2535
24	Spica W. SATURN W. Fomalhaut E. α Pegasi E.	60 47 37 41 1 35 68 56 2 90 21 45	2582 2450 2551 2574	62 31 37 42 43 58 67 20 30 88 42 15	2592 2455 2570 2585	64 15 23 44 26 15 65 45 23 87 2 59	2402 2460 2591 2595	65 58 55 46 8 24 64 10 43 85 23 57	2412 2467 2512 2566
25	Spica W. SATURN W. Antares W. Fomalhaut E. α Pegasi E. MARS E. α Arietis E.	74 32 49 54 36 38 28 39 1 56 25 9 77 12 53 108 20 33 119 22 36	2467 2508 2465 2446 2572 2526 2487	76 14 48 56 17 40 30 21 4 54 53 49 75 35 35 106 44 28 117 41 4	2479 2517 2477 2580 2587 2539 2498	77 56 31 57 58 29 32 2 50 53 23 11 73 58 38 105 8 40 115 59 48	2492 2528 2488 3014 2503 2551 2510	79 37 56 59 39 3 33 44 20 51 53 16 72 22 2 103 33 8 114 18 48	2504 2538 2501 3052 2719 2764 2521
26	Spica W. SATURN W. Antares W. Fomalhaut E. α Pegasi E. MARS E. α Arietis E.	88 0 38 67 58 4 42 7 23 44 36 21 64 24 44 95 39 46 105 58 0	2569 2597 2565 2488 2511 2531 2584	89 40 16 69 37 3 43 47 6 43 11 55 62 50 31 94 5 59 104 18 43	2522 2610 2579 2347 2533 2545 2597	91 19 36 71 15 44 45 26 30 41 48 38 61 16 46 92 32 30 102 39 44	2596 2623 2593 3412 2554 2559 2620	92 58 37 72 54 8 47 5 35 40 26 35 59 43 28 90 59 19 101 1 3	2610 2635 2606 3484 2876 2874 2624
27	Spica W. SATURN W. Antares W. α Pegasi E. MARS E. α Arietis E. Aldebaran E.	101 9 2 81 1 43 55 16 22 52 4 36 83 18 6 92 52 14 124 16 51	2578 2502 2575 3005 2948 2592 2580	102 46 11 82 38 20 56 53 35 50 34 30 81 46 48 91 15 24 122 41 57	2592 2516 2589 3034 2962 2506 2591	104 23 1 84 14 38 58 30 30 49 5 0 80 15 48 89 38 52 121 7 17	2506 2529 2503 3066 2977 2520 2501	105 59 33 85 50 39 60 7 6 47 36 9 78 45 7 88 2 39 119 32 51	2520 2544 2516 3099 2993 2534 2512
28	SATURN W. Antares W. MARS E. α Arietis E. Aldebaran E. SUN E.	93 46 9 68 5 33 71 16 22 80 6 7 111 44 15 140 47 29	2512 2585 3067 2802 2869 3150	95 20 21 69 40 21 69 47 32 78 31 42 110 11 16 139 20 20	2525 2598 3081 2816 2880 3165	96 54 16 71 14 52 68 18 59 76 57 35 108 38 32 137 53 27	2538 2511 3096 2829 2892 3176	98 27 54 72 49 5 66 50 45 75 23 45 107 6 3 136 26 49	2552 2524 3110 2842 2903 3189
29	SATURN W. Antares W. MARS E. α Arietis E. Aldebaran E. SUN E.	106 11 49 80 36 7 59 33 51 67 38 46 99 27 16 129 17 27	2916 2886 3180 2905 2961 3251	107 43 47 82 8 44 58 7 18 66 6 34 97 56 14 127 52 18	2928 2897 3193 2918 2971 3265	109 15 30 83 41 7 56 41 1 64 34 38 96 25 25 126 27 23	2940 2909 3207 2930 2982 3275	110 46 58 85 13 15 55 15 0 63 2 57 94 54 50 125 2 42	2953 2920 3220 2941 2993 3286
30	Antares W. α Aquilæ W. MARS E. α Arietis E. Aldebaran E. SUN E.	92 50 35 47 45 0 48 8 43 55 28 3 87 25 10 118 2 26	2969 4417 3282 2995 3043 3338	94 21 26 48 50 6 46 44 11 53 57 44 85 55 50 116 38 58	2978 4361 3294 3005 3052 3347	95 52 6 49 56 3 45 19 53 52 27 38 84 26 42 115 15 41	2987 4308 3306 3015 3061 3357	97 22 35 51 2 48 43 55 49 50 57 44 82 57 45 113 52 35	2996 4261 3318 3025 3070 3365

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Fomalhaut E.	75 21 54	2586	73 44 55	2701	72 8 16	2716	70 31 58	2733
	α Pegasi E.	97 1 42	2542	95 21 27	2549	93 41 22	2557	92 1 28	2565
24	Spica W.	67 42 12	2422	69 25 15	2433	71 8 2	2445	72 50 33	2455
	SATURN W.	47 50 24	2474	49 32 14	2481	51 13 54	2489	52 55 22	2498
	Fomalhaut E.	62 36 31	2836	61 2 50	2861	59 29 41	2888	57 57 7	2916
	α Pegasi E.	83 45 10	2618	82 6 39	2631	80 28 26	2643	78 50 30	2657
25	Spica W.	81 19 4	2517	82 59 54	2529	84 40 27	2542	86 20 42	2556
	SATURN W.	61 19 23	2550	62 59 27	2561	64 39 16	2573	66 18 48	2585
	Antares W.	35 25 32	2514	37 6 26	2526	38 47 3	2539	40 27 22	2552
	Fomalhaut E.	50 24 8	3092	48 55 49	3135	47 28 22	3182	46 1 51	3233
	α Pegasi E.	70 45 47	2736	69 9 55	2754	67 34 27	2772	65 59 23	2792
	MARS E.	101 57 53	2777	100 22 55	2790	98 48 14	2804	97 13 51	2818
	α Arietis E.	112 38 4	2533	110 57 37	2545	109 17 27	2559	107 37 35	2571
26	Spica W.	94 37 19	2623	96 15 43	2637	97 53 48	2651	99 31 34	2664
	SATURN W.	74 32 15	2649	76 10 4	2662	77 47 35	2675	79 24 48	2689
	Antares W.	48 44 22	2620	50 22 50	2634	52 0 59	2647	53 38 50	2661
	Fomalhaut E.	39 5 53	3363	37 46 38	3649	36 28 57	3746	35 12 58	3853
	α Pegasi E.	58 10 39	2900	56 38 20	2925	55 6 33	2950	53 35 18	2977
	MARS E.	89 26 27	2889	87 53 54	2903	86 21 39	2918	84 49 43	2933
	α Arietis E.	99 22 41	2658	97 44 37	2651	96 6 51	2664	94 29 23	2678
27	Spica W.	107 35 46	2734	109 11 41	2748	110 47 17	2762	112 22 35	2775
	SATURN W.	87 26 21	2757	89 1 45	2771	90 36 51	2785	92 11 39	2798
	Antares W.	61 43 24	2731	63 19 23	2744	64 55 4	2758	66 30 27	2771
	α Pegasi E.	46 7 58	3134	44 40 30	3171	43 13 46	3211	41 47 50	3253
	MARS E.	77 14 45	3008	75 44 42	3022	74 14 57	3037	72 45 30	3052
	α Arietis E.	86 26 44	2747	84 51 7	2762	83 15 49	2775	81 40 49	2789
	Aldebaran E.	117 58 39	2823	116 24 41	2835	114 50 58	2845	113 17 29	2857
28	SATURN W.	100 1 14	2866	101 34 17	2878	103 7 4	2891	104 39 35	2904
	Antares W.	74 23 2	2837	75 56 42	2849	77 30 6	2862	79 3 14	2873
	MARS E.	65 22 48	3124	63 55 8	3139	62 27 46	3153	61 0 40	3167
	α Arietis E.	73 50 12	2855	72 16 56	2868	70 43 56	2881	69 11 13	2894
	Aldebaran E.	105 33 48	2915	104 1 48	2927	102 30 3	2938	100 58 32	2950
	SUN E.	135 0 27	3202	133 34 20	3214	132 8 28	3226	130 42 50	3239
29	SATURN W.	112 18 10	2964	113 49 8	2976	115 19 51	2987	116 50 20	2998
	Antares W.	86 45 9	2930	88 16 50	2941	89 48 17	2950	91 19 32	2960
	MARS E.	53 49 15	3233	52 23 45	3246	50 58 30	3258	49 33 29	3270
	α Arietis E.	61 31 30	2953	60 0 18	2965	58 29 19	2974	56 58 34	2985
	Aldebaran E.	93 24 29	3004	91 54 21	3014	90 24 25	3023	88 54 41	3034
	SUN E.	123 38 14	3297	122 13 59	3307	120 49 56	3318	119 26 5	3328
30	Antares W.	98 52 53	3003	100 23 2	3010	101 53 2	3018	103 22 53	3024
	α Aquilæ W.	52 10 17	4217	53 18 27	4178	54 27 14	4141	55 36 36	4108
	MARS E.	42 31 58	3329	41 8 20	3341	39 44 56	3352	38 21 45	3364
	α Arietis E.	49 28 2	3034	47 58 31	3042	46 29 10	3051	45 0 0	3060
	Aldebaran E.	81 28 59	3078	80 0 23	3087	78 31 57	3094	77 3 40	3102
	SUN E.	112 29 38	3373	111 6 51	3380	109 44 12	3388	108 21 42	3394

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
Wed.	1	^h 6 ^m 43 ^s 49.95	10.332	N. 23 4 19.8	-10.81	15 46.16	68.75	^m 3 ^s 40.69	0.474
Thur.	2	6 47 57.80	10.321	22 59 48.2	11.82	15 46.15	68.71	3 51.95	0.463
Frid.	3	6 52 5.38	10.310	22 54 52.5	12.82	15 46.15	68.67	4 2.94	0.452
Sat.	4	6 56 12.68	10.297	22 49 32.7	-13.82	15 46.15	68.63	4 13.64	0.439
SUN.	5	7 0 19.65	10.284	22 43 49.1	14.81	15 46.16	68.58	4 24.03	0.426
Mon.	6	7 4 26.29	10.269	22 37 41.7	15.80	15 46.17	68.53	4 34.09	0.412
Tues.	7	7 8 32.58	10.254	22 31 10.7	-16.78	15 46.18	68.47	4 43.80	0.397
Wed.	8	7 12 38.49	10.238	22 24 16.3	17.75	15 46.20	68.42	4 53.12	0.381
Thur.	9	7 16 44.01	10.221	22 16 58.7	18.72	15 46.23	68.36	5 2.05	0.364
Frid.	10	7 20 49.11	10.203	22 9 17.9	-19.68	15 46.26	68.30	5 10.57	0.346
Sat.	11	7 24 53.76	10.184	22 1 14.2	20.63	15 46.30	68.24	5 18.64	0.327
SUN.	12	7 28 57.96	10.165	21 52 47.9	21.57	15 46.34	68.17	5 26.26	0.307
Mon.	13	7 33 1.67	10.145	21 43 59.0	-22.50	15 46.39	68.11	5 33.40	0.287
Tues.	14	7 37 4.90	10.124	21 34 47.9	23.42	15 46.45	68.04	5 40.04	0.266
Wed.	15	7 41 7.60	10.102	21 25 14.8	24.34	15 46.51	67.97	5 46.18	0.245
Thur.	16	7 45 9.78	10.080	21 15 19.8	-25.24	15 46.57	67.90	5 51.78	0.223
Frid.	17	7 49 11.42	10.057	21 5 3.3	26.13	15 46.64	67.82	5 56.85	0.200
Sat.	18	7 53 12.51	10.034	20 54 25.5	27.01	15 46.72	67.74	6 1.37	0.177
SUN.	19	7 57 13.03	10.010	20 43 26.5	-27.89	15 46.80	67.67	6 5.32	0.153
Mon.	20	8 1 12.08	9.986	20 32 6.7	28.76	15 46.88	67.59	6 8.70	0.129
Tues.	21	8 5 12.36	9.962	20 20 26.2	29.61	15 46.96	67.51	6 11.51	0.105
Wed.	22	8 9 11.14	9.937	20 8 25.4	-30.45	15 47.05	67.43	6 13.74	0.081
Thur.	23	8 13 9.34	9.913	19 56 4.5	31.29	15 47.15	67.35	6 15.38	0.056
Frid.	24	8 17 6.95	9.888	19 43 23.7	32.11	15 47.24	67.27	6 16.43	0.031
Sat.	25	8 21 3.97	9.863	19 30 23.2	-32.92	15 47.34	67.19	6 16.88	0.007
SUN.	26	8 25 0.40	9.839	19 17 3.4	33.72	15 47.44	67.10	6 16.75	0.018
Mon.	27	8 28 50.22	9.814	19 3 24.4	34.52	15 47.55	67.02	6 16.03	0.042
Tues.	28	8 32 51.46	9.789	18 49 26.5	35.33	15 47.65	66.93	6 14.71	0.067
Wed.	29	8 36 49.11	9.765	18 35 10.0	36.12	15 47.76	66.84	6 12.81	0.092
Thur.	30	8 40 40.77	9.740	18 20 35.1	36.89	15 47.88	66.76	6 10.31	0.116
Frid.	31	8 44 35.63	9.715	18 5 42.1	37.65	15 47.99	66.67	6 7.23	0.141
Sat.	32	8 48 26.51	9.691	N. 17 50 31.2	38.41	15 48.11	66.58	6 3.56	0.165

NOTE.—The mean time of day is given in Greenwich Mean Time, and the apparent time is given in Greenwich Apparent Time.

The sign — prefixed to the hour's change of declination indicates that the declination is decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Wed.	1	^h 6 ^m 43 ^s 49.32	10.331	N. 23 4 20.5	-10.81	^m 3 ^s 40.66	0.474	^h 6 ^m 40 ^s 8.66
Thur.	2	6 47 57.14	10.320	22 59 48.9	11.82	3 51.92	0.463	6 44 5.22
Frid.	3	6 52 4.69	10.309	22 54 53.3	12.82	4 2.91	0.452	6 48 1.78
Sat.	4	6 56 11.95	10.296	22 49 33.7	-13.82	4 13.61	0.439	6 51 58.34
SUN	5	7 0 18.90	10.283	22 43 50.2	14.81	4 24.00	0.426	6 55 54.89
Mon.	6	7 4 25.51	10.268	22 37 42.9	15.79	4 34.06	0.411	6 59 51.45
Tues.	7	7 8 31.78	10.253	22 31 12.0	-16.77	4 43.77	0.396	7 3 48.01
Wed.	8	7 12 37.66	10.237	22 24 17.8	17.75	4 53.09	0.380	7 7 44.57
Thur.	9	7 16 43.15	10.220	22 17 0.2	18.71	5 2.02	0.364	7 11 41.13
Frid.	10	7 20 48.23	10.202	22 9 19.6	-19.67	5 10.54	0.346	7 15 37.69
Sat.	11	7 24 52.86	10.183	22 1 16.0	20.62	5 18.62	0.327	7 19 34.24
SUN.	12	7 28 57.04	10.164	21 52 49.8	21.56	5 26.23	0.307	7 23 30.80
Mon.	13	7 33 0.74	10.144	21 44 1.1	-22.49	5 33.37	0.287	7 27 27.36
Tues.	14	7 37 3.94	10.123	21 34 50.1	23.42	5 40.02	0.266	7 31 23.92
Wed.	15	7 41 6.63	10.101	21 25 17.1	24.33	5 46.16	0.245	7 35 20.48
Thur.	16	7 45 8.80	10.079	21 15 22.3	-25.23	5 51.76	0.223	7 39 17.04
Frid.	17	7 49 10.42	10.056	21 5 5.9	26.12	5 56.83	0.200	7 43 13.59
Sat.	18	7 53 11.50	10.033	20 54 28.1	27.01	6 1.35	0.177	7 47 10.15
SUN.	19	7 57 12.01	10.010	20 43 29.3	-27.89	6 5.30	0.153	7 51 6.71
Mon.	20	8 1 11.96	9.986	20 32 9.6	28.75	6 8.69	0.129	7 55 3.27
Tues.	21	8 5 11.33	9.962	20 20 29.2	29.60	6 11.50	0.105	7 58 59.82
Wed.	22	8 9 10.11	9.937	20 8 28.6	-30.45	6 13.73	0.081	8 2 56.38
Thur.	23	8 13 8.31	9.913	19 56 7.7	31.28	6 15.37	0.057	8 6 52.94
Frid.	24	8 17 5.92	9.888	19 43 27.0	32.11	6 16.42	0.032	8 10 49.50
Sat.	25	8 21 2.94	9.863	19 30 26.6	-32.92	6 16.88	0.007	8 14 46.05
SUN.	26	8 24 59.36	9.839	19 17 6.9	33.72	6 16.75	0.018	8 18 42.61
Mon.	27	8 28 55.20	9.814	19 3 28.0	34.51	6 16.03	0.043	8 22 39.17
Tues.	28	8 32 50.44	9.790	18 49 30.2	-35.30	6 14.72	0.067	8 26 35.72
Wed.	29	8 36 45.10	9.765	18 35 13.7	36.07	6 12.82	0.092	8 30 32.28
Thur.	30	8 40 39.16	9.740	18 20 38.8	36.83	6 10.32	0.116	8 34 28.84
Frid.	31	8 44 32.64	9.716	18 5 45.9	37.58	6 7.25	0.141	8 38 25.40
Sat.	32	8 48 25.53	9.692	N. 17 50 35.0	-38.32	6 3.58	0.165	8 42 21.95

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
+0°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	183	100 4 30.8	3 56.0	142.98	+ 0.20	0.0072090	+ 2.1	17 17 0.98
2	184	101 1 42.4	1 7.5	142.99	0.31	0.0072130	1.3	17 13 5.07
3	185	101 58 54.3	58 19.2	143.00	0.41	0.0072150	+ 0.4	17 9 9.16
4	186	102 56 6.6	55 31.3	143.01	+ 0.48	0.0072148	- 0.5	17 5 13.25
5	187	103 53 19.2	52 43.7	143.03	0.53	0.0072126	1.5	17 1 17.33
6	188	104 50 32.1	49 56.4	143.04	0.55	0.0072079	2.5	16 57 21.42
7	189	105 47 45.3	47 9.4	143.06	+ 0.53	0.0072008	- 3.5	16 53 25.51
8	190	106 44 58.8	44 22.7	143.07	0.48	0.0071912	4.6	16 49 29.60
9	191	107 42 12.6	41 36.3	143.09	0.41	0.0071789	5.6	16 45 33.68
10	192	108 39 26.9	38 50.4	143.10	+ 0.32	0.0071641	- 6.7	16 41 37.77
11	193	109 36 41.2	36 4.6	143.10	0.20	0.0071466	7.9	16 37 41.86
12	194	110 33 55.8	33 19.0	143.11	+ 0.08	0.0071263	9.0	16 33 45.95
13	195	111 31 10.6	30 33.7	143.12	- 0.05	0.0071036	-10.0	16 29 50.04
14	196	112 28 25.7	27 48.6	143.13	0.18	0.0070783	11.0	16 25 54.12
15	197	113 25 40.8	25 3.5	143.14	0.30	0.0070507	12.0	16 21 58.21
16	198	114 22 56.2	22 18.7	143.14	- 0.41	0.0070208	-12.9	16 18 2.30
17	199	115 20 11.7	19 34.1	143.15	0.49	0.0069887	13.8	16 14 6.39
18	200	116 17 27.5	16 49.7	143.16	0.55	0.0069546	14.6	16 10 10.47
19	201	117 14 43.4	14 5.6	143.17	- 0.58	0.0069185	-15.4	16 6 14.56
20	202	118 11 59.6	11 21.6	143.18	0.58	0.0068808	16.1	16 2 18.65
21	203	119 9 16.3	8 38.1	143.20	0.55	0.0068413	16.7	15 58 22.74
22	204	120 6 33.2	5 54.9	143.22	- 0.49	0.0068005	-17.3	15 54 26.83
23	205	121 3 50.6	3 12.2	143.24	0.40	0.0067581	17.9	15 50 30.92
24	206	122 1 8.7	0 30.1	143.26	0.29	0.0067143	18.5	15 46 35.00
25	207	122 58 27.3	57 48.5	143.29	- 0.17	0.0066692	-19.1	15 42 39.09
26	208	123 55 46.7	55 7.7	143.32	- 0.04	0.0066228	19.6	15 38 43.18
27	209	124 53 7.0	52 27.8	143.36	+ 0.10	0.0065752	20.2	15 34 47.27
28	210	125 50 28.1	49 48.8	143.40	+ 0.23	0.0065262	-20.8	15 30 51.36
29	211	126 47 50.3	47 10.8	143.44	0.35	0.0064756	21.4	15 26 55.45
30	212	127 45 13.5	44 33.8	143.49	0.45	0.0064237	22.0	15 22 59.54
31	213	128 42 37.9	41 58.0	143.54	0.53	0.0063702	22.7	15 19 3.62
32	214	129 40 3.4	39 23.4	143.59	+ 0.58	0.0063151	-23.4	15 15 7.71
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st .								Diff. for 1 Hour, —9 ^h .8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
1	14 52.5	14 50.6	54 28.8	−0.69	54 21.7	−0.48	17 18.2	1.64	20.1
2	14 49.4	14 48.8	54 17.2	−0.27	54 15.2	−0.06	17 57.7	1.67	21.1
3	14 49.0	14 49.8	54 15.8	+0.16	54 19.0	+0.37	18 38.7	1.75	22.1
4	14 51.4	14 53.6	54 24.7	+0.58	54 32.8	+0.78	19 22.2	1.88	23.1
5	14 56.5	14 59.9	54 43.3	0.96	54 55.9	1.13	20 9.0	2.03	24.1
6	15 3.9	15 8.3	55 10.5	1.29	55 26.8	1.42	20 59.8	2.20	25.1
7	15 13.1	15 18.2	55 44.5	+1.53	56 3.4	+1.60	21 54.4	2.34	26.1
8	15 23.6	15 29.1	56 23.0	1.65	56 43.1	1.68	22 51.5	2.41	27.1
9	15 34.6	15 40.0	57 3.3	1.67	57 23.2	1.63	23 49.3	2.40	28.1
10	15 45.2	15 50.2	57 42.4	+1.56	58 0.6	+1.46	6		29.1
11	15 54.8	15 59.0	58 17.5	1.35	58 32.9	1.21	0 45.9	2.31	0.7
12	16 2.7	16 5.9	58 46.5	1.05	58 58.2	0.89	1 40.0	2.20	1.7
13	16 8.5	16 10.5	59 7.8	+0.71	59 15.3	+0.55	2 31.4	2.09	2.7
14	16 12.0	16 13.0	59 20.8	0.38	59 24.4	+0.22	3 20.6	2.02	3.7
15	16 13.5	16 13.5	59 26.2	+0.06	59 26.2	−0.08	4 8.8	2.00	4.7
16	16 13.0	16 12.2	59 24.5	−0.20	59 21.4	−0.30	4 57.3	2.04	5.7
17	16 11.0	16 9.5	59 17.1	0.41	59 11.6	0.51	5 47.3	2.13	6.7
18	16 7.7	16 5.6	59 4.9	0.60	58 57.1	0.69	6 40.0	2.26	7.7
19	16 3.2	16 0.6	58 48.4	−0.77	58 38.7	−0.85	7 35.9	2.40	8.7
20	15 57.7	15 54.5	58 28.1	0.92	58 16.6	0.99	8 34.7	2.49	9.7
21	15 51.2	15 47.6	58 4.2	1.07	57 51.0	1.14	9 34.7	2.50	10.7
22	15 43.8	15 39.7	57 37.0	−1.20	57 22.2	−1.26	10 33.8	2.41	11.7
23	15 35.5	15 31.2	57 6.8	1.31	56 50.8	1.34	11 29.8	2.25	12.7
24	15 26.8	15 22.3	56 34.6	1.36	56 18.2	1.37	12 21.6	2.07	13.7
25	15 17.8	15 13.4	56 1.8	−1.35	55 45.7	−1.32	13 9.1	1.90	14.7
26	15 9.2	15 5.2	55 30.2	1.26	55 15.4	1.19	13 53.0	1.77	15.7
27	15 1.4	14 58.0	55 1.6	1.10	54 49.1	0.98	14 34.3	1.68	16.7
28	14 55.0	14 52.5	54 38.0	−0.85	54 28.7	−0.70	15 14.2	1.64	17.7
29	14 50.4	14 49.0	54 21.2	0.53	54 15.9	−0.35	15 53.7	1.65	18.7
30	14 48.2	14 47.9	54 12.8	−0.16	54 12.0	+0.04	16 33.9	1.71	19.7
31	14 48.4	14 49.6	54 13.7	+0.25	54 18.0	0.46	17 16.0	1.81	20.7
32	14 51.4	14 54.0	54 24.8	+0.68	54 34.2	+0.89	18 1.0	1.94	21.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 30 44.73	1.7617	S. 0 33 15.8	13.961	0	0 55 37.11	1.8040	N. 10 19 39.9	12.993
1	23 32 30.40	1.7607	0 19 18.3	13.956	1	0 57 25.43	1.8068	10 32 38.4	12.957
2	23 34 16.02	1.7599	S. 0 5 21.1	13.951	2	0 59 13.92	1.8096	10 45 34.7	12.920
3	23 36 1.59	1.7591	N. 0 8 35.8	13.945	3	1 1 2.58	1.8124	10 58 28.8	12.882
4	23 37 47.11	1.7584	0 22 32.3	13.938	4	1 2 51.41	1.8153	11 11 20.6	12.843
5	23 39 32.60	1.7578	0 36 28.3	13.930	5	1 4 40.42	1.8183	11 24 10.0	12.803
6	23 41 18.05	1.7572	0 50 23.9	13.922	6	1 6 29.61	1.8214	11 36 57.0	12.763
7	23 43 3.47	1.7568	1 4 19.0	13.913	7	1 8 18.99	1.8246	11 49 41.6	12.722
8	23 44 48.87	1.7565	1 18 13.5	13.904	8	1 10 8.56	1.8278	12 2 23.7	12.681
9	23 46 34.25	1.7562	1 32 7.5	13.894	9	1 11 58.33	1.8312	12 15 3.3	12.638
10	23 48 19.61	1.7559	1 46 0.8	13.883	10	1 13 48.30	1.8345	12 27 40.3	12.595
11	23 50 4.96	1.7558	1 59 53.4	13.872	11	1 15 38.47	1.8379	12 40 14.7	12.552
12	23 51 50.30	1.7557	2 13 45.4	13.860	12	1 17 28.84	1.8414	12 52 40.5	12.507
13	23 53 35.64	1.7557	2 27 36.6	13.847	13	1 19 19.43	1.8450	13 5 15.6	12.462
14	23 55 20.99	1.7558	2 41 27.0	13.833	14	1 21 10.24	1.8486	13 17 41.9	12.415
15	23 57 6.34	1.7559	2 55 16.6	13.820	15	1 23 1.26	1.8523	13 30 5.4	12.368
16	23 58 51.70	1.7562	3 9 5.4	13.805	16	1 24 52.51	1.8561	13 42 26.1	12.321
17	0 0 37.08	1.7565	3 22 53.2	13.789	17	1 26 43.99	1.8600	13 54 43.9	12.272
18	0 2 22.48	1.7569	3 36 40.1	13.773	18	1 28 35.71	1.8639	14 6 58.7	12.222
19	0 4 7.91	1.7574	3 50 26.0	13.757	19	1 30 27.66	1.8678	14 19 10.5	12.172
20	0 5 53.37	1.7579	4 4 10.9	13.740	20	1 32 19.85	1.8719	14 31 19.3	12.122
21	0 7 38.86	1.7585	4 17 54.8	13.722	21	1 34 12.29	1.8761	14 43 25.1	12.070
22	0 9 24.39	1.7592	4 31 37.6	13.703	22	1 36 4.98	1.8802	14 55 27.7	12.017
23	0 11 9.97	1.7600	N. 4 45 19.2	13.684	23	1 37 57.92	1.8844	N. 15 7 27.1	11.965
THURSDAY 2.					SATURDAY 4.				
0	0 12 55.59	1.7608	N. 4 58 59.7	13.665	0	1 39 51.11	1.8887	N. 15 19 23.3	11.909
1	0 14 41.27	1.7618	5 12 39.0	13.644	1	1 41 44.56	1.8931	15 31 16.2	11.853
2	0 16 27.01	1.7628	5 26 17.0	13.623	2	1 43 38.28	1.8976	15 43 5.7	11.797
3	0 18 12.81	1.7638	5 39 53.7	13.601	3	1 45 32.27	1.9021	15 54 51.9	11.741
4	0 19 58.67	1.7650	5 53 29.1	13.579	4	1 47 26.53	1.9067	16 6 34.6	11.682
5	0 21 44.61	1.7663	6 7 3.2	13.557	5	1 49 21.07	1.9113	16 18 13.8	11.623
6	0 23 30.63	1.7677	6 20 35.9	13.533	6	1 51 15.88	1.9159	16 29 49.4	11.563
7	0 25 16.73	1.7690	6 34 7.2	13.508	7	1 53 10.98	1.9207	16 41 21.4	11.503
8	0 27 2.91	1.7704	6 47 36.9	13.483	8	1 55 6.37	1.9255	16 52 49.8	11.442
9	0 28 49.18	1.7719	7 1 5.1	13.458	9	1 57 2.04	1.9303	17 4 14.5	11.380
10	0 30 35.54	1.7736	7 14 31.8	13.432	10	1 58 58.00	1.9352	17 15 35.4	11.316
11	0 32 22.01	1.7753	7 27 56.9	13.405	11	2 0 54.26	1.9402	17 26 52.4	11.252
12	0 34 8.58	1.7771	7 41 20.4	13.377	12	2 2 50.83	1.9453	17 38 5.6	11.187
13	0 35 55.26	1.7789	7 54 42.2	13.349	13	2 4 47.70	1.9504	17 49 14.9	11.121
14	0 37 42.05	1.7807	8 8 2.3	13.320	14	2 6 44.88	1.9555	18 0 20.1	11.054
15	0 39 28.95	1.7828	8 21 20.6	13.291	15	2 8 42.36	1.9607	18 11 21.3	10.986
16	0 41 15.98	1.7849	8 34 37.2	13.261	16	2 10 40.16	1.9660	18 22 18.4	10.917
17	0 43 3.14	1.7870	8 47 51.9	13.229	17	2 12 38.28	1.9713	18 33 11.3	10.846
18	0 44 50.42	1.7892	9 1 4.7	13.197	18	2 14 36.71	1.9766	18 43 59.9	10.775
19	0 46 37.84	1.7915	9 14 15.6	13.165	19	2 16 35.47	1.9821	18 54 44.3	10.704
20	0 48 25.40	1.7938	9 27 24.5	13.132	20	2 18 34.56	1.9875	19 5 24.4	10.631
21	0 50 13.10	1.7962	9 40 31.5	13.099	21	2 20 33.97	1.9929	19 16 0.0	10.557
22	0 52 0.95	1.7987	9 53 36.4	13.064	22	2 22 33.71	1.9983	19 26 31.2	10.482
23	0 53 48.95	1.8013	10 6 39.2	13.029	23	2 24 33.79	2.0038	19 36 57.8	10.405
24	0 55 37.11	1.8040	N. 10 19 39.9	12.991	24	2 26 34.21	2.0093	N. 19 47 19.8	10.327

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	2 26 34.21	2.0098	N.19 47 19.8	10.327	0	4 10 2.36	2.3029	N.26 13 14.5	5.307
1	2 28 34.97	2.0155	19 57 37.1	10.250	1	4 12 20.71	2.3087	26 18 29.0	5.174
2	2 30 36.07	2.0212	20 7 49.8	10.172	2	4 14 39.40	2.3144	26 23 35.4	5.039
3	2 32 37.51	2.0269	20 17 57.7	10.091	3	4 16 58.44	2.3201	26 28 33.7	4.903
4	2 34 39.30	2.0327	20 28 0.7	10.009	4	4 19 17.81	2.3257	26 33 23.8	4.767
5	2 36 41.44	2.0386	20 37 58.8	9.927	5	4 21 37.52	2.3313	26 38 5.8	4.631
6	2 38 43.93	2.0445	20 47 52.0	9.844	6	4 23 57.56	2.3368	26 42 39.5	4.492
7	2 40 46.78	2.0504	20 57 40.1	9.759	7	4 26 17.93	2.3422	26 47 4.8	4.352
8	2 42 49.98	2.0563	21 7 23.1	9.673	8	4 28 38.62	2.3475	26 51 21.7	4.212
9	2 44 53.54	2.0623	21 17 0.9	9.587	9	4 30 59.63	2.3527	26 55 30.2	4.070
10	2 46 57.46	2.0684	21 26 33.5	9.499	10	4 33 20.95	2.3579	26 59 30.1	3.927
11	2 49 1.75	2.0745	21 36 0.8	9.410	11	4 35 42.58	2.3631	27 3 21.4	3.782
12	2 51 6.40	2.0805	21 45 22.7	9.320	12	4 38 4.52	2.3682	27 7 4.0	3.637
13	2 53 11.41	2.0866	21 54 39.2	9.229	13	4 40 26.76	2.3732	27 10 37.9	3.492
14	2 55 16.79	2.0927	22 3 50.2	9.137	14	4 42 49.30	2.3780	27 14 3.0	3.345
15	2 57 22.54	2.0989	22 12 55.7	9.044	15	4 45 12.12	2.3828	27 17 19.3	3.197
16	2 59 28.66	2.1051	22 21 55.5	8.949	16	4 47 35.23	2.3875	27 20 26.7	3.048
17	3 1 35.15	2.1113	22 30 49.6	8.853	17	4 49 58.62	2.3922	27 23 25.1	2.898
18	3 3 42.02	2.1176	22 39 37.9	8.757	18	4 52 22.29	2.3968	27 26 14.5	2.748
19	3 5 49.26	2.1238	22 48 20.4	8.659	19	4 54 46.23	2.4012	27 28 54.9	2.596
20	3 7 56.87	2.1300	22 56 57.0	8.560	20	4 57 10.43	2.4054	27 31 26.1	2.443
21	3 10 4.86	2.1363	23 5 27.6	8.460	21	4 59 34.88	2.4097	27 33 48.1	2.290
22	3 12 13.23	2.1426	23 13 52.2	8.358	22	5 1 59.59	2.4139	27 36 0.9	2.137
23	3 14 21.97	2.1488	N.23 22 10.6	8.255	23	5 4 24.55	2.4179	N.27 38 4.5	1.982
MONDAY 6.					WEDNESDAY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	3 16 31.09	2.1552	N.23 30 22.8	8.152	0	5 6 49.74	2.4218	N.27 39 58.7	1.825
1	3 18 40.59	2.1615	23 38 28.8	8.047	1	5 9 15.17	2.4257	27 41 43.5	1.669
2	3 20 50.47	2.1677	23 46 28.4	7.940	2	5 11 40.83	2.4294	27 43 19.0	1.512
3	3 23 0.72	2.1740	23 54 21.6	7.833	3	5 14 6.70	2.4332	27 44 45.0	1.354
4	3 25 11.35	2.1803	24 2 8.4	7.725	4	5 16 32.78	2.4364	27 46 1.5	1.195
5	3 27 22.36	2.1867	24 9 48.6	7.615	5	5 18 59.07	2.4399	27 47 8.4	1.035
6	3 29 33.75	2.1930	24 17 22.2	7.504	6	5 21 25.57	2.4432	27 48 5.7	0.875
7	3 31 45.52	2.1992	24 24 49.1	7.392	7	5 23 52.26	2.4465	27 48 53.4	0.714
8	3 33 57.66	2.2055	24 32 9.3	7.279	8	5 26 19.13	2.4493	27 49 31.4	0.553
9	3 36 10.18	2.2118	24 39 22.6	7.164	9	5 28 46.18	2.4522	27 49 59.7	0.391
10	3 38 23.08	2.2181	24 46 29.0	7.049	10	5 31 13.40	2.4551	27 50 18.3	0.228
11	3 40 36.35	2.2243	24 53 28.5	6.932	11	5 33 40.79	2.4578	27 50 27.1	+ 0.065
12	3 42 50.00	2.2306	25 0 20.9	6.814	12	5 36 8.34	2.4604	27 50 26.1	- 0.099
13	3 45 4.02	2.2368	25 7 6.2	6.695	13	5 38 36.04	2.4628	27 50 15.2	0.263
14	3 47 18.41	2.2429	25 13 44.3	6.574	14	5 41 3.88	2.4651	27 49 54.5	0.428
15	3 49 33.17	2.2491	25 20 15.1	6.452	15	5 43 31.85	2.4672	27 49 23.9	0.593
16	3 51 48.30	2.2552	25 26 38.6	6.330	16	5 45 59.95	2.4693	27 48 43.3	0.759
17	3 54 3.80	2.2613	25 32 54.7	6.207	17	5 48 28.17	2.4712	27 47 52.8	0.924
18	3 56 19.66	2.2674	25 39 3.4	6.082	18	5 50 56.50	2.4730	27 46 52.4	1.090
19	3 58 35.89	2.2734	25 45 4.5	5.955	19	5 53 24.93	2.4747	27 45 42.0	1.257
20	4 0 52.47	2.2793	25 50 58.0	5.827	20	5 55 53.46	2.4763	27 44 21.6	1.424
21	4 3 9.41	2.2853	25 56 43.8	5.698	21	5 58 22.08	2.4777	27 42 51.1	1.592
22	4 5 26.71	2.2912	26 2 21.8	5.569	22	6 0 50.78	2.4789	27 41 10.6	1.759
23	4 7 44.36	2.2971	26 7 52.1	5.439	23	6 3 19.55	2.4801	27 39 20.0	1.927
24	4 10 2.36	2.3029	N.26 13 14.5	5.307	24	6 5 48.39	2.4812	N.27 37 19.4	2.094

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	6 5 48.39	2.4812	N.27 37 19.4	2.094	0	8 3 44.70	2.3932	N.22 47 17.2	9.774
1	6 8 17.29	2.4820	27 35 8.7	2.262	1	8 6 8.17	2.3892	22 37 26.5	9.915
2	6 10 46.23	2.4827	27 32 47.9	2.430	2	8 8 31.40	2.3852	22 27 27.4	10.055
3	6 13 15.21	2.4833	27 30 17.1	2.598	3	8 10 54.39	2.3811	22 17 19.9	10.194
4	6 15 44.23	2.4838	27 27 36.2	2.767	4	8 13 17.13	2.3770	22 7 4.1	10.331
5	6 18 13.27	2.4842	27 24 45.1	2.936	5	8 15 39.63	2.3729	21 56 40.2	10.467
6	6 20 42.33	2.4844	27 21 43.9	3.104	6	8 18 1.88	2.3688	21 46 8.1	10.602
7	6 23 11.40	2.4845	27 18 32.6	3.272	7	8 20 23.88	2.3646	21 35 28.0	10.735
8	6 25 40.47	2.4845	27 15 11.3	3.439	8	8 22 45.63	2.3603	21 24 39.9	10.867
9	6 28 9.54	2.4843	27 11 39.9	3.607	9	8 25 7.12	2.3561	21 13 43.9	10.998
10	6 30 38.59	2.4840	27 7 58.4	3.776	10	8 27 28.36	2.3518	21 2 40.1	11.128
11	6 33 7.62	2.4837	27 4 6.8	3.944	11	8 29 49.34	2.3475	20 51 28.5	11.257
12	6 35 36.63	2.4832	27 0 5.1	4.112	12	8 32 10.06	2.3432	20 40 9.3	11.383
13	6 38 5.60	2.4824	26 55 53.4	4.279	13	8 34 30.52	2.3388	20 28 42.5	11.509
14	6 40 34.52	2.4816	26 51 31.7	4.446	14	8 36 50.72	2.3345	20 17 8.2	11.633
15	6 43 3.39	2.4807	26 46 59.9	4.613	15	8 39 10.66	2.3301	20 5 26.5	11.757
16	6 45 32.21	2.4797	26 42 18.1	4.779	16	8 41 30.33	2.3257	19 53 37.4	11.878
17	6 48 0.66	2.4785	26 37 26.4	4.945	17	8 43 49.74	2.3213	19 41 41.1	11.998
18	6 50 29.63	2.4772	26 32 24.7	5.111	18	8 46 8.89	2.3169	19 29 37.6	12.117
19	6 52 58.22	2.4758	26 27 13.1	5.276	19	8 48 27.77	2.3125	19 17 27.1	12.234
20	6 55 26.73	2.4743	26 21 51.6	5.442	20	8 50 46.39	2.3082	19 5 9.5	12.351
21	6 57 55.14	2.4727	26 16 20.1	5.607	21	8 53 4.75	2.3038	18 52 45.0	12.465
22	7 0 23.45	2.4710	26 10 38.8	5.770	22	8 55 22.84	2.2993	18 40 13.7	12.578
23	7 2 51.66	2.4692	N.26 4 47.7	5.934	23	8 57 40.67	2.2949	N.18 27 35.7	12.689
FRIDAY 10.					SUNDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	7 5 19.75	2.4672	N.25 58 46.7	6.097	0	8 59 58.23	2.2905	N.18 14 51.0	12.799
1	7 7 47.72	2.4651	25 52 36.0	6.259	1	9 2 15.53	2.2862	18 1 59.8	12.907
2	7 10 15.56	2.4629	25 46 15.6	6.421	2	9 4 32.57	2.2818	17 49 2.1	13.015
3	7 12 43.27	2.4607	25 39 45.5	6.582	3	9 6 49.35	2.2775	17 35 58.0	13.121
4	7 15 10.84	2.4583	25 33 5.7	6.743	4	9 9 5.87	2.2732	17 22 47.6	13.225
5	7 17 38.27	2.4558	25 26 16.3	6.903	5	9 11 22.13	2.2688	17 9 31.0	13.327
6	7 20 5.54	2.4532	25 19 17.4	7.062	6	9 13 38.13	2.2646	16 56 8.3	13.428
7	7 22 32.65	2.4505	25 12 8.9	7.220	7	9 15 53.88	2.2603	16 42 39.6	13.528
8	7 24 59.60	2.4478	25 4 51.0	7.378	8	9 18 9.37	2.2561	16 29 5.0	13.626
9	7 27 26.39	2.4450	24 57 23.6	7.535	9	9 20 24.61	2.2518	16 15 24.5	13.723
10	7 29 53.00	2.4420	24 49 46.8	7.691	10	9 22 39.59	2.2477	16 1 38.3	13.818
11	7 32 19.43	2.4390	24 42 0.7	7.846	11	9 24 54.33	2.2436	15 47 46.4	13.912
12	7 34 45.68	2.4359	24 34 5.3	8.001	12	9 27 8.82	2.2394	15 33 48.9	14.004
13	7 37 11.74	2.4327	24 26 0.6	8.154	13	9 29 23.06	2.2353	15 19 45.9	14.094
14	7 39 37.60	2.4294	24 17 46.8	8.306	14	9 31 37.06	2.2313	15 5 37.6	14.182
15	7 42 3.27	2.4261	24 9 23.9	8.457	15	9 33 50.82	2.2273	14 51 24.0	14.270
16	7 44 28.74	2.4227	24 0 51.9	8.608	16	9 36 4.34	2.2233	14 37 5.2	14.356
17	7 46 54.00	2.4192	23 52 10.9	8.757	17	9 38 17.62	2.2194	14 22 41.3	14.440
18	7 49 19.05	2.4157	23 43 21.0	8.906	18	9 40 30.67	2.2156	14 8 12.4	14.522
19	7 51 43.88	2.4121	23 34 22.2	9.053	19	9 42 43.49	2.2117	13 53 38.6	14.604
20	7 54 8.50	2.4084	23 25 14.6	9.200	20	9 44 56.08	2.2079	13 38 59.9	14.684
21	7 56 32.89	2.4046	23 15 58.2	9.346	21	9 47 8.44	2.2042	13 24 16.5	14.762
22	7 58 57.05	2.4008	23 6 33.1	9.490	22	9 49 20.58	2.2005	13 9 28.5	14.838
23	8 1 20.99	2.3971	22 56 59.4	9.632	23	9 51 32.50	2.1968	12 54 35.9	14.913
24	8 3 44.70	2.3932	N.22 47 17.2	9.774	24	9 53 44.20	2.1932	N.12 39 38.9	14.987

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	9 53 44.20	2.1932	N. 12 39 38.9	14.987	0	11 36 8.00	2.1025	S. 0 14 34.3	16.679
1	9 55 55.69	2.1897	12 24 37.5	15.058	1	11 38 14.15	2.1026	0 31 15.0	16.677
2	9 58 6.97	2.1862	12 9 31.9	15.128	2	11 40 20.31	2.1027	0 47 55.6	16.674
3	10 0 18.04	2.1827	11 54 22.1	15.197	3	11 42 26.48	2.1030	1 4 35.9	16.668
4	10 2 28.90	2.1794	11 39 8.2	15.264	4	11 44 32.67	2.1033	1 21 15.8	16.662
5	10 4 39.57	2.1762	11 23 50.4	15.329	5	11 46 38.88	2.1037	1 37 55.3	16.653
6	10 6 50.04	2.1729	11 8 28.7	15.393	6	11 48 45.12	2.1042	1 54 34.2	16.643
7	10 9 0.31	2.1697	10 53 3.2	15.456	7	11 50 51.39	2.1048	2 11 12.5	16.632
8	10 11 10.40	2.1666	10 37 34.0	15.517	8	11 52 57.70	2.1056	2 27 50.1	16.619
9	10 13 20.30	2.1635	10 22 1.2	15.576	9	11 55 4.06	2.1064	2 44 26.8	16.605
10	10 15 30.02	2.1605	10 6 24.9	15.634	10	11 57 10.47	2.1072	3 1 2.7	16.590
11	10 17 39.56	2.1576	9 50 45.1	15.691	11	11 59 16.93	2.1082	3 17 37.6	16.572
12	10 19 48.93	2.1547	9 35 2.0	15.745	12	12 1 23.45	2.1092	3 34 11.4	16.553
13	10 21 58.13	2.1519	9 19 15.7	15.798	13	12 3 30.03	2.1104	3 50 44.0	16.533
14	10 24 7.16	2.1492	9 3 26.3	15.849	14	12 5 36.69	2.1116	4 7 15.4	16.512
15	10 26 16.03	2.1466	8 47 33.8	15.899	15	12 7 43.42	2.1128	4 23 45.4	16.488
16	10 28 24.75	2.1440	8 31 38.4	15.947	16	12 9 50.23	2.1142	4 40 14.0	16.464
17	10 30 33.31	2.1414	8 15 40.1	15.994	17	12 11 57.13	2.1157	4 56 41.1	16.437
18	10 32 41.72	2.1390	7 59 39.1	16.039	18	12 14 4.11	2.1172	5 13 6.5	16.409
19	10 34 49.99	2.1367	7 43 35.4	16.083	19	12 16 11.19	2.1188	5 29 30.2	16.380
20	10 36 58.12	2.1343	7 27 29.1	16.125	20	12 18 18.37	2.1206	5 45 52.1	16.350
21	10 39 6.11	2.1321	7 11 20.4	16.165	21	12 20 25.66	2.1224	6 2 12.2	16.318
22	10 41 13.97	2.1299	6 55 9.3	16.204	22	12 22 33.06	2.1242	6 18 30.3	16.284
23	10 43 21.70	2.1278	N. 6 38 55.9	16.242	23	12 24 40.57	2.1262	S. 6 34 46.3	16.248
TUESDAY 14.					THURSDAY 16.				
0	10 45 29.31	2.1258	N. 6 22 40.3	16.277	0	12 26 48.20	2.1282	S. 6 51 0.1	16.212
1	10 47 36.80	2.1239	6 6 22.6	16.312	1	12 28 55.96	2.1304	7 7 11.7	16.174
2	10 49 44.18	2.1222	5 50 2.9	16.345	2	12 31 3.85	2.1327	7 23 21.0	16.134
3	10 51 51.46	2.1204	5 33 41.2	16.377	3	12 33 11.88	2.1350	7 39 27.8	16.093
4	10 53 58.63	2.1188	5 17 17.7	16.406	4	12 35 20.05	2.1374	7 55 32.1	16.051
5	10 56 5.71	2.1172	5 0 52.5	16.433	5	12 37 28.37	2.1398	8 11 33.9	16.007
6	10 58 12.69	2.1156	4 44 25.7	16.460	6	12 39 36.83	2.1424	8 27 32.9	15.960
7	11 0 19.58	2.1142	4 27 57.3	16.485	7	12 41 45.45	2.1450	8 43 29.1	15.913
8	11 2 26.39	2.1128	4 11 27.5	16.508	8	12 43 54.23	2.1476	8 59 22.5	15.865
9	11 4 33.12	2.1116	3 54 56.3	16.531	9	12 46 3.17	2.1504	9 15 12.9	15.815
10	11 6 39.78	2.1104	3 38 23.8	16.552	10	12 48 12.28	2.1533	9 31 0.3	15.763
11	11 8 46.37	2.1092	3 21 50.1	16.571	11	12 50 21.57	2.1563	9 46 44.5	15.710
12	11 10 52.89	2.1082	3 5 15.3	16.588	12	12 52 31.04	2.1593	10 2 25.5	15.656
13	11 12 59.35	2.1072	2 48 39.5	16.604	13	12 54 40.69	2.1624	10 18 3.2	15.599
14	11 15 5.76	2.1064	2 32 2.8	16.618	14	12 56 50.53	2.1656	10 33 37.4	15.541
15	11 17 12.12	2.1057	2 15 25.3	16.632	15	12 59 0.56	2.1688	10 49 8.1	15.482
16	11 19 18.44	2.1050	1 58 47.0	16.643	16	13 1 10.79	2.1722	11 4 35.2	15.422
17	11 21 24.72	2.1043	1 42 8.1	16.652	17	13 3 21.22	2.1755	11 19 58.7	15.360
18	11 23 30.96	2.1038	1 25 28.7	16.661	18	13 5 31.85	2.1789	11 35 18.4	15.296
19	11 25 37.18	2.1034	1 8 48.8	16.668	19	13 7 42.69	2.1825	11 50 34.2	15.230
20	11 27 43.37	2.1030	0 52 8.5	16.673	20	13 9 53.75	2.1862	12 5 46.0	15.163
21	11 29 49.54	2.1027	0 35 28.0	16.677	21	13 12 5.03	2.1898	12 20 53.8	15.096
22	11 31 55.70	2.1026	0 18 47.3	16.679	22	13 14 16.53	2.1936	12 35 57.5	15.028
23	11 34 1.85	2.1025	N. 0 2 6.5	16.680	23	13 16 28.26	2.1974	12 50 56.9	14.954
24	11 36 8.00	2.1025	S. 0 14 34.3	16.679	24	13 18 40.22	2.2013	S. 13 5 52.0	14.881

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	13 18 40.22	2.2013	S. 13 5 52.0	24.881	0	15 9 40.50	2.4325	S. 23 7 42.2	9.629
1	13 20 52.42	2.2052	13 20 42.6	24.807	1	15 12 6.60	2.4374	23 17 15.6	9.485
2	13 23 4.85	2.2092	13 35 28.8	24.732	2	15 14 32.99	2.4422	23 26 40.4	9.340
3	13 25 17.52	2.2132	13 50 10.4	24.654	3	15 16 59.66	2.4469	23 35 56.4	9.193
4	13 27 30.43	2.2173	14 4 47.3	24.575	4	15 19 26.62	2.4517	23 45 3.6	9.045
5	13 29 43.60	2.2216	14 19 19.4	24.495	5	15 21 53.86	2.4564	23 54 1.8	8.895
6	13 31 57.02	2.2258	14 33 46.7	24.413	6	15 24 21.39	2.4611	24 2 51.0	8.745
7	13 34 10.69	2.2301	14 48 9.0	24.329	7	15 26 49.19	2.4657	24 11 31.2	8.593
8	13 36 24.63	2.2345	15 2 26.2	24.244	8	15 29 17.27	2.4702	24 20 2.2	8.440
9	13 38 38.83	2.2389	15 16 38.3	24.158	9	15 31 45.61	2.4746	24 28 24.0	8.287
10	13 40 53.30	2.2433	15 30 45.2	24.071	10	15 34 14.22	2.4790	24 36 36.6	8.132
11	13 43 8.03	2.2478	15 44 46.8	23.981	11	15 36 43.09	2.4833	24 44 39.8	7.975
12	13 45 23.03	2.2523	15 58 42.9	23.889	12	15 39 12.22	2.4876	24 52 33.6	7.817
13	13 47 38.31	2.2570	16 12 33.5	23.797	13	15 41 41.60	2.4917	25 0 17.9	7.659
14	13 49 53.87	2.2617	16 26 18.5	23.703	14	15 44 11.23	2.4958	25 7 52.7	7.500
15	13 52 9.71	2.2663	16 39 57.9	23.608	15	15 46 41.10	2.4998	25 15 17.9	7.339
16	13 54 25.83	2.2711	16 53 31.5	23.511	16	15 49 11.21	2.5038	25 22 33.4	7.177
17	13 56 42.24	2.2759	17 6 59.2	23.412	17	15 51 41.56	2.5077	25 29 39.2	7.015
18	13 58 58.94	2.2807	17 20 20.9	23.312	18	15 54 12.13	2.5114	25 36 35.2	6.852
19	14 1 15.93	2.2856	17 33 36.6	23.211	19	15 56 42.92	2.5150	25 43 21.4	6.687
20	14 3 33.21	2.2904	17 46 46.2	23.107	20	15 59 13.93	2.5186	25 49 57.7	6.522
21	14 5 50.78	2.2953	17 59 49.5	23.002	21	16 1 45.15	2.5220	25 56 24.0	6.355
22	14 8 8.65	2.3003	18 12 46.5	22.897	22	16 4 16.57	2.5253	26 2 40.3	6.187
23	14 10 26.82	2.3053	S. 18 25 37.1	22.789	23	16 6 48.19	2.5286	S. 26 8 46.5	6.020
SATURDAY 18.					MONDAY 20.				
0	14 12 45.29	2.3103	S. 18 38 21.2	22.680	0	16 9 20.01	2.5318	S. 26 14 42.7	5.852
1	14 15 4.06	2.3154	18 50 58.7	22.569	1	16 11 52.01	2.5348	26 20 28.7	5.682
2	14 17 23.14	2.3205	19 3 29.5	22.457	2	16 14 24.19	2.5378	26 26 4.5	5.512
3	14 19 42.52	2.3255	19 15 53.6	22.344	3	16 16 56.55	2.5407	26 31 30.1	5.341
4	14 22 2.20	2.3306	19 28 10.8	22.229	4	16 19 29.07	2.5433	26 36 45.4	5.169
5	14 24 22.19	2.3357	19 40 21.1	22.113	5	16 22 1.75	2.5458	26 41 50.3	4.996
6	14 26 42.49	2.3409	19 52 24.4	21.996	6	16 24 34.57	2.5483	26 46 44.9	4.823
7	14 29 3.10	2.3461	20 4 20.6	21.876	7	16 27 7.54	2.5507	26 51 29.1	4.649
8	14 31 24.02	2.3512	20 16 9.5	21.754	8	16 29 40.65	2.5529	26 56 2.8	4.475
9	14 33 45.24	2.3563	20 27 51.1	21.632	9	16 32 13.89	2.5550	27 0 26.1	4.301
10	14 36 6.77	2.3614	20 39 25.3	21.508	10	16 34 47.25	2.5569	27 4 38.9	4.125
11	14 38 28.61	2.3666	20 50 52.1	21.383	11	16 37 20.72	2.5588	27 8 41.1	3.949
12	14 40 50.77	2.3718	21 2 11.3	21.257	12	16 39 54.30	2.5605	27 12 32.8	3.773
13	14 43 13.23	2.3769	21 13 22.9	21.129	13	16 42 27.98	2.5620	27 16 13.9	3.597
14	14 45 36.00	2.3821	21 24 26.8	21.000	14	16 45 1.74	2.5633	27 19 44.4	3.423
15	14 47 59.08	2.3872	21 35 22.8	20.868	15	16 47 35.58	2.5646	27 23 4.2	3.248
16	14 50 22.47	2.3923	21 46 10.9	20.736	16	16 50 9.49	2.5657	27 26 13.4	3.064
17	14 52 46.16	2.3974	21 56 51.1	20.603	17	16 52 43.47	2.5668	27 29 11.9	2.886
18	14 55 10.16	2.4025	22 7 23.3	20.468	18	16 55 17.51	2.5677	27 31 59.7	2.707
19	14 57 34.46	2.4076	22 17 47.3	20.332	19	16 57 51.59	2.5683	27 34 36.8	2.529
20	14 59 59.07	2.4127	22 28 3.1	20.193	20	17 0 25.71	2.5689	27 37 3.2	2.350
21	15 2 23.98	2.4177	22 38 10.5	20.054	21	17 2 59.86	2.5693	27 39 18.8	2.171
22	15 4 49.19	2.4227	22 48 9.6	9.914	22	17 5 34.03	2.5696	27 41 23.7	1.992
23	15 7 14.70	2.4276	22 58 0.2	9.772	23	17 8 8.21	2.5697	27 43 17.9	1.814
24	15 9 40.50	2.4325	S. 23 7 42.2	9.629	24	17 10 42.40	2.5697	S. 27 45 1.4	1.635

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
0	17 10 42.40	2.5697	S. 27 45 1.4	1.635	0	19 11 17.52	2.4060	S. 25 44 19.0	6.373
1	17 13 16.58	2.5695	27 46 34.1	1.456	1	19 13 41.70	2.3999	25 37 52.3	6.517
2	17 15 50.74	2.5692	27 47 56.1	1.277	2	19 16 5.51	2.3937	25 31 17.0	6.659
3	17 18 24.88	2.5687	27 49 7.3	1.097	3	19 18 28.95	2.3875	25 24 33.2	6.799
4	17 20 58.99	2.5681	27 50 7.8	0.918	4	19 20 52.01	2.3813	25 17 41.1	6.938
5	17 23 33.05	2.5673	27 50 57.5	0.739	5	19 23 14.70	2.3750	25 10 40.7	7.076
6	17 26 7.06	2.5663	27 51 36.5	0.561	6	19 25 37.01	2.3686	25 3 32.0	7.213
7	17 28 41.01	2.5653	27 52 4.8	0.382	7	19 27 58.93	2.3621	24 56 15.2	7.347
8	17 31 14.89	2.5641	27 52 22.4	0.204	8	19 30 20.46	2.3557	24 48 50.3	7.481
9	17 33 48.70	2.5627	27 52 29.3	-0.026	9	19 32 41.61	2.3492	24 41 17.5	7.613
10	17 36 22.42	2.5612	27 52 25.5	+0.152	10	19 35 2.36	2.3425	24 33 36.8	7.744
11	17 38 56.04	2.5595	27 52 11.1	0.329	11	19 37 22.71	2.3358	24 25 48.2	7.874
12	17 41 29.56	2.5577	27 51 46.1	0.506	12	19 39 42.66	2.3292	24 17 51.9	8.008
13	17 44 2.96	2.5557	27 51 10.4	0.682	13	19 42 2.21	2.3225	24 9 48.0	8.138
14	17 46 36.24	2.5536	27 50 24.2	0.858	14	19 44 21.36	2.3158	24 1 36.5	8.263
15	17 49 9.39	2.5513	27 49 27.4	1.034	15	19 46 40.11	2.3091	23 53 17.6	8.377
16	17 51 42.40	2.5489	27 48 20.1	1.209	16	19 48 58.45	2.3023	23 44 51.3	8.499
17	17 54 15.26	2.5463	27 47 2.3	1.383	17	19 51 16.38	2.2955	23 36 17.7	8.619
18	17 56 47.96	2.5436	27 45 34.1	1.557	18	19 53 33.91	2.2887	23 27 37.0	8.738
19	17 59 20.49	2.5407	27 43 55.4	1.731	19	19 55 51.03	2.2818	23 18 49.2	8.856
20	18 1 52.85	2.5378	27 42 6.4	1.904	20	19 58 7.73	2.2749	23 9 54.3	8.973
21	18 4 25.03	2.5347	27 40 7.0	2.076	21	20 0 24.02	2.2681	23 0 52.4	9.088
22	18 6 57.02	2.5315	27 37 57.3	2.247	22	20 2 39.90	2.2612	22 51 43.7	9.200
23	18 9 28.81	2.5281	S. 27 35 37.3	2.418	23	20 4 55.36	2.2542	S. 22 42 28.2	9.313
WEDNESDAY 22.					FRIDAY 24.				
0	18 12 0.39	2.5246	S. 27 33 7.1	2.588	0	20 7 10.41	2.2473	S. 22 33 6.1	9.423
1	18 14 31.76	2.5209	27 30 26.7	2.757	1	20 9 25.05	2.2405	22 23 37.4	9.538
2	18 17 2.90	2.5171	27 27 36.2	2.926	2	20 11 39.27	2.2336	22 14 2.2	9.640
3	18 19 33.81	2.5132	27 24 35.6	3.094	3	20 13 53.08	2.2267	22 4 20.6	9.747
4	18 22 4.48	2.5091	27 21 24.9	3.261	4	20 16 6.47	2.2197	21 54 32.6	9.852
5	18 24 34.90	2.5050	27 18 4.3	3.426	5	20 18 19.45	2.2128	21 44 38.4	9.954
6	18 27 5.08	2.5008	27 14 33.8	3.591	6	20 20 32.01	2.2059	21 34 38.1	10.056
7	18 29 35.00	2.4964	27 10 53.4	3.755	7	20 22 44.16	2.1991	21 24 31.7	10.157
8	18 32 4.65	2.4918	27 7 3.2	3.917	8	20 24 55.90	2.1922	21 14 19.3	10.255
9	18 34 34.02	2.4872	27 3 3.3	4.079	9	20 27 7.22	2.1853	21 4 1.1	10.352
10	18 37 3.11	2.4825	26 58 53.7	4.241	10	20 29 18.13	2.1785	20 53 37.1	10.448
11	18 39 31.92	2.4777	26 54 34.4	4.401	11	20 31 28.64	2.1717	20 43 7.3	10.543
12	18 42 0.43	2.4727	26 50 5.6	4.559	12	20 33 38.74	2.1649	20 32 31.9	10.636
13	18 44 28.64	2.4677	26 45 27.3	4.717	13	20 35 48.43	2.1581	20 21 51.0	10.727
14	18 46 56.55	2.4625	26 40 39.6	4.873	14	20 37 57.71	2.1513	20 11 4.6	10.817
15	18 49 24.14	2.4572	26 35 42.5	5.029	15	20 40 6.59	2.1446	20 0 12.9	10.906
16	18 51 51.41	2.4518	26 30 36.1	5.183	16	20 42 15.07	2.1379	19 49 15.9	10.993
17	18 54 18.36	2.4464	26 25 20.5	5.337	17	20 44 23.14	2.1312	19 38 13.7	11.079
18	18 56 44.98	2.4408	26 19 55.7	5.489	18	20 46 30.81	2.1245	19 27 6.4	11.163
19	18 59 11.26	2.4353	26 14 21.8	5.639	19	20 48 38.08	2.1179	19 15 54.1	11.247
20	19 1 37.21	2.4297	26 8 39.0	5.788	20	20 50 44.96	2.1114	19 4 36.8	11.328
21	19 4 2.82	2.4239	26 2 47.2	5.937	21	20 52 51.45	2.1048	18 53 14.7	11.408
22	19 6 28.08	2.4180	25 56 46.5	6.084	22	20 54 57.54	2.0983	18 41 47.8	11.487
23	19 8 52.98	2.4120	25 50 37.1	6.229	23	20 57 3.25	2.0919	18 30 16.2	11.564
24	19 11 17.52	2.4060	S. 25 44 19.0	6.373	24	20 59 8.57	2.0855	S. 18 18 40.1	11.640

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 25.					MONDAY 27.				
0	h m s	a	S. 18 18 40.1	11.640	0	h m s	a	S. 7 56 15.9	13.858
1	21 1 13.51	2.0791	18 6 59.4	11.715	1	22 34 41.71	1.8400	7 42 24.2	13.872
2	21 3 18.06	2.0727	17 55 14.3	11.788	2	22 36 32.01	1.8366	7 28 31.3	13.890
3	21 5 22.23	2.0664	17 43 24.8	11.861	3	22 38 22.10	1.8334	7 14 37.4	13.908
4	21 7 26.03	2.0602	17 31 31.0	11.932	4	22 40 12.00	1.8302	7 0 42.4	13.925
5	21 9 29.45	2.0539	17 19 33.0	12.001	5	22 42 1.72	1.8271	6 46 46.4	13.942
6	21 11 32.50	2.0478	17 7 30.9	12.068	6	22 43 51.25	1.8240	6 32 49.4	13.957
7	21 13 35.18	2.0417	16 55 24.8	12.135	7	22 45 40.60	1.8211	6 18 51.6	13.971
8	21 15 37.50	2.0356	16 43 14.7	12.201	8	22 47 29.78	1.8182	6 4 52.9	13.985
9	21 17 39.45	2.0295	16 31 0.7	12.265	9	22 49 18.78	1.8153	5 50 53.4	13.997
10	21 19 41.04	2.0236	16 18 42.9	12.327	10	22 51 7.61	1.8125	5 36 53.2	14.009
11	21 21 42.28	2.0177	16 6 21.4	12.389	11	22 52 56.28	1.8099	5 22 52.3	14.021
12	21 23 43.17	2.0119	15 53 56.2	12.450	12	22 54 44.80	1.8073	5 8 50.7	14.031
13	21 25 43.71	2.0061	15 41 27.4	12.508	13	22 56 33.16	1.8048	4 54 48.6	14.039
14	21 27 43.90	2.0003	15 28 55.2	12.566	14	22 58 21.37	1.8023	4 40 46.0	14.048
15	21 29 43.74	1.9946	15 16 19.5	12.623	15	23 0 9.44	1.8000	4 26 42.8	14.056
16	21 31 43.25	1.9891	15 3 40.4	12.678	16	23 1 57.37	1.7977	4 12 39.2	14.062
17	21 33 42.43	1.9835	14 50 58.1	12.732	17	23 3 45.16	1.7954	3 58 35.3	14.067
18	21 35 41.27	1.9779	14 38 12.6	12.784	18	23 5 32.82	1.7933	3 44 31.1	14.072
19	21 37 39.78	1.9725	14 25 24.0	12.836	19	23 7 20.36	1.7912	3 30 26.6	14.077
20	21 39 37.97	1.9672	14 12 32.3	12.887	20	23 9 7.77	1.7892	3 16 21.9	14.081
21	21 41 35.84	1.9619	13 59 37.6	12.936	21	23 10 55.06	1.7872	3 2 16.9	14.084
22	21 43 33.39	1.9566	13 46 40.0	12.984	22	23 12 42.24	1.7854	2 48 11.8	14.086
23	21 45 30.63	1.9513	S. 13 33 39.5	13.032	23	23 14 29.31	1.7836	S. 2 34 6.6	14.087
SUNDAY 26.					TUESDAY 28.				
0	21 47 27.55	1.9462	S. 13 20 36.2	13.077	0	23 16 16.27	1.7818	S. 2 20 1.3	14.088
1	21 49 24.17	1.9412	13 7 30.2	13.122	1	23 18 3.13	1.7802	2 5 56.0	14.087
2	21 51 20.49	1.9362	12 54 21.6	13.165	2	23 19 49.90	1.7787	1 51 50.8	14.086
3	21 53 16.51	1.9313	12 41 10.4	13.207	3	23 21 36.58	1.7772	1 37 45.7	14.084
4	21 55 12.24	1.9264	12 27 56.7	13.248	4	23 23 23.17	1.7758	1 23 40.7	14.082
5	21 57 7.68	1.9215	12 14 40.6	13.288	5	23 25 9.68	1.7744	1 9 35.9	14.078
6	21 59 2.82	1.9167	12 1 22.1	13.327	6	23 26 56.10	1.7731	0 55 31.3	14.074
7	22 0 57.68	1.9121	11 48 1.3	13.365	7	23 28 42.45	1.7720	0 41 27.0	14.069
8	22 2 52.27	1.9075	11 34 38.3	13.402	8	23 30 28.74	1.7709	0 27 23.0	14.064
9	22 4 46.58	1.9029	11 21 13.1	13.438	9	23 32 14.96	1.7698	S. 0 13 19.3	14.058
10	22 6 40.62	1.8985	11 7 45.8	13.473	10	23 34 1.12	1.7689	N. 0 0 44.0	14.051
11	22 8 34.40	1.8942	10 54 16.4	13.507	11	23 35 47.23	1.7680	0 14 46.8	14.043
12	22 10 27.92	1.8899	10 40 45.0	13.539	12	23 37 33.28	1.7671	0 28 49.1	14.034
13	22 12 21.18	1.8856	10 27 11.7	13.571	13	23 39 19.28	1.7663	0 42 50.9	14.025
14	22 14 14.19	1.8813	10 13 36.5	13.601	14	23 41 5.24	1.7657	0 56 52.1	14.016
15	22 16 6.94	1.8772	9 59 59.6	13.630	15	23 42 51.17	1.7652	1 10 52.8	14.006
16	22 17 59.45	1.8732	9 46 20.9	13.659	16	23 44 37.06	1.7646	1 24 52.8	13.994
17	22 19 51.72	1.8692	9 32 40.5	13.686	17	23 46 22.92	1.7641	1 38 52.0	13.981
18	22 21 43.75	1.8652	9 18 58.6	13.712	18	23 48 8.75	1.7637	1 52 50.5	13.968
19	22 23 35.55	1.8614	9 5 15.1	13.738	19	23 49 54.56	1.7634	2 6 48.2	13.955
20	22 25 27.12	1.8577	8 51 30.0	13.763	20	23 51 40.36	1.7632	2 20 45.1	13.941
21	22 27 18.47	1.8540	8 37 43.5	13.787	21	23 53 26.14	1.7630	2 34 41.1	13.926
22	22 29 9.60	1.8503	8 23 55.6	13.809	22	23 55 11.92	1.7630	2 48 36.2	13.911
23	22 31 0.51	1.8467	8 10 6.4	13.831	23	23 56 57.70	1.7629	3 2 30.4	13.895
24	22 32 51.21	1.8433	S. 7 56 15.9	13.852	24	23 58 43.47	1.7629	N. 3 16 23.6	13.878

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.																				
WEDNESDAY 29.					FRIDAY 31.																								
0	23 58 43.47	1.7689	N. 3 16 23.6	13.878	0	1 24 46.48	1.8494	N. 13 50 13.2	12.267																				
1	0 0 29.25	1.7691	3 30 15.7	13.880	1	1 26 37.55	1.8530	14 2 27.7	12.216																				
2	0 2 15.04	1.7693	3 44 6.8	13.882	2	1 28 28.84	1.8566	14 14 39.1	12.164																				
3	0 4 0.85	1.7696	3 57 56.8	13.883	3	1 30 20.34	1.8602	14 26 47.3	12.111																				
4	0 5 46.67	1.7699	4 11 45.6	13.885	4	1 32 12.06	1.8638	14 38 52.4	12.057																				
5	0 7 32.52	1.7643	4 25 33.2	13.783	5	1 34 4.00	1.8676	14 50 54.2	12.005																				
6	0 9 18.39	1.7647	4 39 19.6	13.764	6	1 35 56.17	1.8714	15 2 52.8	11.949																				
7	0 11 4.29	1.7653	4 53 4.7	13.741	7	1 37 48.57	1.8753	15 14 48.1	11.893																				
8	0 12 50.23	1.7660	5 6 48.5	13.719	8	1 39 41.21	1.8792	15 26 40.0	11.837																				
9	0 14 36.21	1.7667	5 20 30.9	13.696	9	1 41 34.08	1.8832	15 38 28.5	11.779																				
10	0 16 22.23	1.7673	5 34 12.0	13.672	10	1 43 27.19	1.8872	15 50 13.5	11.721																				
11	0 18 8.31	1.7684	5 47 51.6	13.647	11	1 45 20.55	1.8912	16 1 55.0	11.662																				
12	0 19 54.44	1.7693	6 1 29.7	13.622	12	1 47 14.16	1.8956	16 13 33.0	11.603																				
13	0 21 40.63	1.7703	6 15 6.3	13.597	13	1 49 8.02	1.8998	16 25 7.4	11.543																				
14	0 23 26.88	1.7713	6 28 41.3	13.571	14	1 51 2.14	1.9042	16 36 38.1	11.482																				
15	0 25 13.19	1.7724	6 42 14.8	13.544	15	1 52 56.52	1.9085	16 48 5.2	11.420																				
16	0 26 59.57	1.7737	6 55 46.6	13.516	16	1 54 51.16	1.9129	16 59 28.5	11.356																				
17	0 28 46.03	1.7750	7 9 16.7	13.488	17	1 56 46.07	1.9174	17 10 47.9	11.292																				
18	0 30 32.57	1.7763	7 22 45.1	13.459	18	1 58 41.25	1.9219	17 22 3.5	11.227																				
19	0 32 19.19	1.7777	7 36 11.8	13.429	19	2 0 36.70	1.9265	17 33 15.2	11.162																				
20	0 34 5.90	1.7792	7 49 36.6	13.398	20	2 2 32.43	1.9312	17 44 22.9	11.095																				
21	0 35 52.70	1.7808	8 2 59.6	13.368	21	2 4 28.44	1.9359	17 55 26.6	11.028																				
22	0 37 39.60	1.7825	8 16 20.8	13.336	22	2 6 24.74	1.9407	18 6 26.2	10.960																				
23	0 39 26.60	1.7842	N. 8 29 40.0	13.303	23	2 8 21.32	1.9454	N. 18 17 21.8	10.892																				
THURSDAY 30.					SATURDAY, AUGUST 1.																								
0	0 41 13.70	1.7859	N. 8 42 57.2	13.270	0	2 10 18.19	1.9503	N. 18 28 13.2	10.822																				
1	0 43 0.91	1.7878	8 56 12.4	13.237	PHASES OF THE MOON.																								
2	0 44 48.24	1.7897	9 9 25.6	13.202																									
3	0 46 35.68	1.7917	9 22 36.7	13.167																									
4	0 48 23.24	1.7937	9 35 45.7	13.132																									
5	0 50 10.93	1.7959	9 48 52.5	13.095	<table><tr><td></td><td>d</td><td>h</td><td>m</td></tr><tr><td>☾ Last Quarter . . . July</td><td>2</td><td>13</td><td>23.2</td></tr><tr><td>● New Moon</td><td>10</td><td>7</td><td>35.0</td></tr><tr><td>☽ First Quarter</td><td>17</td><td>4</td><td>4.3</td></tr><tr><td>○ Full Moon</td><td>24</td><td>5</td><td>45.1</td></tr></table>						d	h	m	☾ Last Quarter . . . July	2	13	23.2	● New Moon	10	7	35.0	☽ First Quarter	17	4	4.3	○ Full Moon	24	5	45.1
	d	h	m																										
☾ Last Quarter . . . July	2	13	23.2																										
● New Moon	10	7	35.0																										
☽ First Quarter	17	4	4.3																										
○ Full Moon	24	5	45.1																										
6	0 51 58.75	1.7982	10 1 57.1	13.058	<table><tr><td></td><td>d</td><td>h</td></tr><tr><td>☾ Apogee July</td><td>2</td><td>15.2</td></tr><tr><td>☾ Perigee</td><td>15</td><td>6.0</td></tr><tr><td>☾ Apogee</td><td>30</td><td>9.8</td></tr></table>						d	h	☾ Apogee July	2	15.2	☾ Perigee	15	6.0	☾ Apogee	30	9.8								
	d	h																											
☾ Apogee July	2	15.2																											
☾ Perigee	15	6.0																											
☾ Apogee	30	9.8																											
7	0 53 46.71	1.8004	10 14 59.5	13.020																									
8	0 55 34.80	1.8027	10 27 59.5	12.981																									
9	0 57 23.03	1.8051	10 40 57.2	12.942																									
10	0 59 11.41	1.8076	10 53 52.5	12.902																									
11	1 0 59.95	1.8102	11 6 45.4	12.861																									
12	1 2 48.64	1.8128	11 19 35.8	12.819																									
13	1 4 37.49	1.8155	11 32 23.7	12.777																									
14	1 6 26.50	1.8182	11 45 9.1	12.735																									
15	1 8 15.68	1.8211	11 57 51.9	12.692																									
16	1 10 5.03	1.8240	12 10 32.1	12.647																									
17	1 11 54.56	1.8269	12 23 9.6	12.602																									
18	1 13 44.26	1.8298	12 35 44.3	12.556																									
19	1 15 34.14	1.8330	12 48 16.3	12.510																									
20	1 17 24.22	1.8362	13 0 45.5	12.462																									
21	1 19 14.49	1.8395	13 13 11.8	12.414																									
22	1 21 4.96	1.8427	13 25 35.2	12.366																									
23	1 22 55.62	1.8460	13 37 55.7	12.317																									
24	1 24 46.48	1.8494	N. 13 50 13.2	12.267																									

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Antares W.	104 52 36	3030	106 22 12	3036	107 51 40	3041	109 21 2	3046
	α Aquilæ W.	56 46 30	4077	57 56 54	4049	59 7 45	4083	60 19 2	3999
	MARS E.	36 58 47	3375	35 36 2	3386	34 13 30	3398	32 51 11	3410
	α Arietis E.	43 31 1	3067	42 2 11	3075	40 33 31	3082	39 5 0	3091
	Aldebaran E.	75 35 33	3109	74 7 34	3116	72 39 44	3122	71 12 1	3129
	SUN E.	106 59 19	3401	105 37 4	3407	104 14 55	3413	102 52 53	3418
2	α Aquilæ W.	66 20 54	3901	67 34 13	3886	68 47 47	3871	70 1 36	3856
	Fomalhaut W.	40 8 32	3899	41 21 53	3853	42 36 1	3811	43 50 52	3772
	Aldebaran E.	63 55 14	3155	62 28 11	3160	61 1 14	3164	59 34 22	3168
	SUN E.	96 3 57	3435	94 42 20	3438	93 20 46	3438	91 59 13	3440
3	α Aquilæ W.	76 14 6	3796	77 29 12	3786	78 44 29	3776	79 59 56	3767
	Fomalhaut W.	50 14 10	3622	51 32 21	3597	52 50 59	3574	54 10 2	3552
	Aldebaran E.	52 21 7	3185	50 54 40	3188	49 28 17	3192	48 1 58	3195
	SUN E.	85 11 34	3437	83 49 59	3435	82 28 22	3432	81 6 42	3429
4	α Aquilæ W.	86 19 31	3726	87 35 51	3718	88 52 19	3711	90 8 54	3705
	Fomalhaut W.	60 50 55	3457	62 12 7	3439	63 33 39	3433	64 55 29	3407
	α Pegasi W.	38 38 43	3558	39 58 3	3521	41 18 4	3487	42 38 43	3455
	Aldebaran E.	40 51 30	3217	39 25 41	3224	38 0 0	3231	36 34 27	3238
	SUN E.	74 17 16	3406	72 55 6	3400	71 32 49	3393	70 10 24	3386
5	α Aquilæ W.	96 33 24	3678	97 50 34	3675	99 7 48	3672	100 25 5	3669
	Fomalhaut W.	71 49 9	3331	73 12 45	3317	74 36 37	3302	76 0 46	3288
	α Pegasi W.	49 30 17	3320	50 54 5	3296	52 18 21	3274	53 43 3	3253
	SUN E.	63 16 12	3345	61 52 52	3335	60 29 21	3325	59 5 38	3315
6	Fomalhaut W.	83 5 32	3220	84 31 17	3208	85 57 17	3194	87 23 33	3182
	α Pegasi W.	60 52 39	3153	62 19 44	3134	63 47 12	3116	65 15 2	3099
	SUN E.	52 4 0	3259	50 39 1	3247	49 13 47	3235	47 48 19	3222
7	Fomalhaut W.	94 38 35	3122	96 6 18	3110	97 34 15	3100	99 2 25	3089
	α Pegasi W.	72 39 33	3013	74 9 30	2996	75 39 48	2980	77 10 26	2965
	MARS W.	32 4 47	3143	33 32 4	3124	34 59 45	3105	36 27 51	3083
	α Arietis W.	29 21 38	2869	30 54 37	2849	32 28 1	2831	34 1 48	2813
	SUN E.	40 37 12	3157	39 10 11	3144	37 42 55	3131	36 15 23	3118
8	α Pegasi W.	84 48 29	2888	86 21 3	2874	87 53 55	2859	89 27 6	2846
	MARS W.	43 54 14	2991	45 24 38	2973	46 55 24	2957	48 26 31	2940
	α Arietis W.	41 56 24	2730	43 32 24	2714	45 8 45	2698	46 45 27	2683
	SUN E.	28 53 44	3054	27 24 38	3042	25 55 17	3030	24 25 42	3020
12	SUN W.	21 39 33	2679	23 16 41	2666	24 54 7	2655	26 31 48	2644
	Spica E.	70 16 15	2315	68 31 6	2309	66 45 48	2322	65 0 21	2316
	SATURN E.	90 12 6	2366	88 27 42	2359	86 43 9	2353	84 58 27	2347
	Antares E.	116 8 28	2332	114 23 15	2324	112 37 51	2318	110 52 18	2311
13	SUN W.	34 43 16	2606	36 22 3	2600	38 0 58	2595	39 40 0	2591
	Spica E.	56 11 5	2291	54 24 53	2288	52 38 36	2285	50 52 14	2281
	SATURN E.	76 13 1	2324	74 27 37	2322	72 42 9	2318	70 56 36	2315
	Antares E.	102 2 26	2286	100 16 6	2283	98 29 41	2279	96 43 11	2275

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	Antares W.	110 50 18	3050	112 19 29	3054	113 48 35	3057	115 17 37	3060
	α Aquilæ W.	61 30 43	3076	62 42 46	3055	63 55 10	3036	65 7 53	3019
	MARS E.	31 29 6	3423	30 7 15	3437	28 45 40	3451	27 24 21	3467
	α Arietis E.	37 36 39	3098	36 8 27	3105	34 40 24	3113	33 12 30	3119
	Aldebaran E.	69 44 26	3134	68 16 58	3140	66 49 37	3145	65 22 22	3151
	SUN E.	101 30 57	3423	100 9 6	3426	98 47 19	3430	97 25 36	3433
2	α Aquilæ W.	71 15 40	3044	72 29 57	3030	73 44 28	3019	74 59 11	3007
	Fomalhaut W.	45 6 23	3737	46 22 31	3705	47 39 13	3675	48 56 27	3648
	Aldebaran E.	58 7 34	3172	56 40 51	3175	55 14 12	3179	53 47 38	3182
	SUN E.	90 37 42	3440	89 16 11	3439	87 54 39	3439	86 33 7	3438
3	α Aquilæ W.	81 15 33	3757	82 31 20	3749	83 47 15	3741	85 3 19	3733
	Fomalhaut W.	55 29 29	3531	56 49 19	3512	58 9 30	3493	59 30 2	3474
	Aldebaran E.	46 35 43	3198	45 9 32	3203	43 43 26	3207	42 17 25	3212
	SUN E.	79 44 58	3425	78 23 10	3421	77 1 17	3416	75 39 19	3412
4	α Aquilæ W.	91 25 36	3699	92 42 24	3693	93 59 19	3688	95 16 19	3683
	Fomalhaut W.	66 17 38	3391	67 40 5	3376	69 2 49	3361	70 25 50	3345
	α Pegasi W.	43 59 57	3425	45 21 45	3396	46 44 6	3370	48 6 57	3345
	Aldebaran E.	35 9 3	3248	33 43 51	3260	32 18 53	3276	30 54 13	3295
	SUN E.	68 47 52	3379	67 25 11	3371	66 2 21	3362	64 39 21	3354
5	α Aquilæ W.	101 42 25	3667	102 59 47	3666	104 17 10	3665	105 34 34	3665
	Fomalhaut W.	77 25 11	3274	78 49 53	3261	80 14 50	3247	81 40 3	3234
	α Pegasi W.	55 8 10	3232	56 33 41	3211	57 59 37	3192	59 25 56	3172
	SUN E.	57 41 44	3304	56 17 37	3294	54 53 18	3282	53 28 46	3270
6	Fomalhaut W.	88 50 4	3169	90 16 50	3157	91 43 51	3145	93 11 6	3133
	α Pegasi W.	66 43 13	3081	68 11 46	3065	69 40 41	3046	71 9 57	3030
	SUN E.	46 22 36	3209	44 56 38	3197	43 30 25	3183	42 3 56	3171
7	Fomalhaut W.	100 30 48	3079	101 59 23	3070	103 28 9	3060	104 57 7	3052
	α Pegasi W.	78 41 23	2947	80 12 40	2933	81 44 17	2917	83 16 14	2903
	MARS W.	37 56 21	3064	39 25 15	3045	40 54 32	3026	42 24 12	3009
	α Arietis W.	35 35 59	2796	37 10 32	2779	38 45 28	2763	40 20 45	2746
	SUN E.	34 47 35	3105	33 19 31	3091	31 51 11	3078	30 22 35	3066
8	α Pegasi W.	91 0 34	2832	92 34 20	2819	94 8 23	2806	95 42 43	2795
	MARS W.	49 57 59	2924	51 29 48	2907	53 1 58	2891	54 34 28	2875
	α Arietis W.	48 22 30	2668	49 59 53	2652	51 37 37	2638	53 15 40	2624
	SUN E.	22 55 54	3010	21 25 54	3001	19 55 43	2995	18 25 24	2991
12	SUN W.	28 9 43	2635	29 47 50	2626	31 26 9	2619	33 4 38	2612
	Spica E.	63 14 45	2311	61 29 1	2305	59 43 9	2300	57 57 10	2296
	SATURN E.	83 13 36	2342	81 28 38	2337	79 43 32	2332	77 58 19	2328
	Antares E.	109 6 35	2306	107 20 44	2300	105 34 45	2296	103 48 39	2291
13	SUN W.	41 19 8	2586	42 58 22	2583	44 37 41	2579	46 17 5	2576
	Spica E.	49 5 47	2279	47 19 16	2276	45 32 41	2274	43 46 4	2272
	SATURN E.	69 10 59	2313	67 25 19	2312	65 39 37	2311	63 53 53	2311
	Antares E.	94 56 35	2272	93 9 55	2269	91 23 10	2267	89 36 22	2265

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
14	SUN W.	47 56 33	2574	49 36 4	2571	51 15 39	2569	52 55 16	2567
	JUPITER W.	26 38 59	2328	28 24 18	2326	30 9 39	2325	31 55 2	2324
	Spica E.	41 59 24	2272	40 12 43	2270	38 26 0	2270	36 39 16	2270
	SATURN E.	62 8 9	2310	60 22 24	2311	58 36 40	2311	56 50 56	2312
	Antares E.	87 49 31	2265	86 2 37	2262	84 15 41	2260	82 28 43	2259
15	SUN W.	61 13 46	2565	62 53 29	2565	64 33 12	2566	66 12 54	2566
	JUPITER W.	40 42 13	2323	42 27 39	2323	44 13 5	2324	45 58 29	2325
	Regulus W.	26 24 0	2260	28 10 59	2260	29 57 57	2261	31 44 54	2262
	SATURN E.	48 2 59	2326	46 17 38	2331	44 32 24	2337	42 47 18	2343
	Antares E.	73 33 38	2258	71 46 37	2258	69 59 36	2260	68 12 37	2260
16	SUN W.	74 31 4	2574	76 10 35	2576	77 50 3	2578	79 29 28	2580
	JUPITER W.	54 45 4	2333	56 30 16	2335	58 15 25	2337	60 0 30	2339
	Regulus W.	40 39 16	2269	42 26 1	2270	44 12 44	2272	45 59 24	2275
	Antares E.	59 18 7	2268	57 31 20	2270	55 44 37	2272	53 57 57	2275
	α Aquilæ E.	110 27 6	3060	108 58 7	3045	107 28 50	3032	105 59 17	3022
17	SUN W.	87 45 39	2596	89 24 40	2599	91 3 37	2602	92 42 29	2606
	JUPITER W.	68 44 59	2355	70 29 39	2357	72 14 15	2361	73 58 46	2364
	Regulus W.	54 51 45	2289	56 38 0	2292	58 24 11	2296	60 10 17	2300
	Antares E.	45 5 35	2289	43 19 20	2292	41 33 9	2296	39 47 3	2299
	α Aquilæ E.	98 28 48	2989	96 58 22	2988	95 27 54	2987	93 57 25	2987
18	SUN W.	100 55 30	2626	102 33 49	2631	104 12 2	2635	105 50 9	2640
	JUPITER W.	82 40 0	2384	84 23 58	2389	86 7 49	2393	87 51 34	2397
	Regulus W.	68 59 24	2318	70 44 57	2323	72 30 23	2327	74 15 43	2331
	α Aquilæ E.	86 25 40	3009	84 55 38	3017	83 25 46	3026	81 56 5	3037
	Fomalhaut E.	111 20 3	2687	109 43 5	2683	108 6 2	2680	106 28 55	2678
19	SUN W.	113 59 3	2666	115 36 29	2671	117 13 48	2677	118 50 59	2683
	Regulus W.	83 0 45	2355	84 45 24	2360	86 29 56	2365	88 14 21	2371
	Spica W.	29 2 22	2369	30 46 41	2373	32 30 55	2377	34 15 3	2382
	α Aquilæ E.	74 31 30	3110	73 3 32	3129	71 35 58	3139	70 8 49	3173
	Fomalhaut E.	98 23 5	2681	96 45 59	2683	95 8 56	2687	93 31 58	2691
20	SUN W.	126 54 54	2713	128 31 16	2720	130 7 29	2727	131 43 33	2735
	Regulus W.	96 54 26	2399	98 38 2	2405	100 21 30	2412	102 4 49	2418
	Spica W.	42 54 1	2407	44 37 26	2412	46 20 44	2417	48 3 54	2422
	α Aquilæ E.	63 0 39	3319	61 36 49	3356	60 13 42	3385	58 51 20	3438
	Fomalhaut E.	85 28 49	2721	83 52 37	2730	82 16 37	2739	80 40 49	2748
	α Pegasi E.	107 30 10	2670	105 51 28	2612	104 12 50	2615	102 34 16	2609
21	Spica W.	56 37 29	2456	58 19 44	2463	60 1 49	2470	61 43 44	2476
	SATURN W.	37 15 53	2551	38 55 55	2552	40 35 56	2553	42 15 55	2555
	Fomalhaut E.	72 45 15	2200	71 10 57	2222	69 36 58	2238	68 3 19	2255
	α Pegasi E.	94 22 53	2644	92 44 58	2652	91 7 13	2658	89 29 37	2666
22	Spica W.	70 10 39	2517	71 51 29	2525	73 32 7	2533	75 12 34	2543
	SATURN W.	50 34 47	2576	52 14 15	2583	53 53 34	2581	55 32 45	2596
	Fomalhaut E.	60 20 54	2955	58 49 45	2980	57 19 7	3006	55 49 2	3034
	α Pegasi E.	81 24 24	2711	79 47 59	2722	78 11 48	2732	76 35 51	2744

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	SUN W.	54 34 56	2566	56 14 37	2565	57 54 20	2565	59 34 3	2565
	JUPITER W.	33 40 27	2583	35 25 53	2583	37 11 19	2582	38 56 46	2582
	Spica E.	34 52 32	2570	33 5 48	2571	31 19 6	2572	29 32 25	2574
	SATURN E.	55 5 14	2513	53 19 34	2516	51 33 58	2519	49 48 26	2522
	Antares E.	80 41 43	2258	78 54 42	2258	77 7 41	2258	75 20 40	2258
15	SUN W.	67 52 36	2567	69 32 16	2569	71 11 54	2570	72 51 30	2572
	JUPITER W.	47 43 52	2586	49 29 13	2588	51 14 32	2589	52 59 49	2591
	Regulus W.	33 31 50	2263	35 18 44	2264	37 5 37	2265	38 52 28	2267
	SATURN E.	41 2 21	2590	39 17 35	2590	37 33 1	2588	35 48 41	2580
	Antares E.	66 25 39	2261	64 38 42	2263	62 51 48	2264	61 4 56	2266
16	SUN W.	81 8 50	2583	82 48 8	2585	84 27 23	2589	86 6 33	2592
	JUPITER W.	61 45 32	2542	63 30 30	2545	65 15 24	2548	67 0 14	2551
	Regulus W.	47 46 0	2277	49 32 33	2281	51 19 1	2283	53 5 25	2286
	Antares E.	52 11 21	2278	50 24 49	2280	48 38 20	2283	46 51 55	2286
	α Aquilæ E.	104 29 31	3012	102 59 33	3004	101 29 25	2997	99 59 9	2993
17	SUN W.	94 21 16	2610	95 59 58	2614	97 38 34	2618	99 17 5	2622
	JUPITER W.	75 43 12	2588	77 27 32	2592	79 11 47	2596	80 55 56	2580
	Regulus W.	61 56 17	2503	63 42 12	2507	65 28 2	2511	67 13 46	2515
	Antares E.	38 1 2	2503	36 15 7	2507	34 29 17	2511	32 43 33	2514
	α Aquilæ E.	92 26 56	2989	90 56 30	2992	89 26 7	2997	87 55 50	3002
18	SUN W.	107 28 9	2645	109 6 3	2650	110 43 50	2655	112 21 30	2660
	JUPITER W.	89 35 13	2402	91 18 45	2407	93 2 10	2412	94 45 28	2416
	Regulus W.	76 0 57	2536	77 46 4	2540	79 31 5	2545	81 15 59	2550
	α Aquilæ E.	80 26 38	3048	78 57 25	3051	77 28 28	3056	75 59 49	3059
	Fomalhaut E.	104 51 46	2677	103 14 35	2677	101 37 24	2678	100 0 14	2678
19	SUN W.	120 28 2	2688	122 4 58	2695	123 41 45	2701	125 18 24	2707
	Regulus W.	89 58 38	2576	91 42 47	2582	93 26 48	2587	95 10 41	2593
	Spica W.	35 59 4	2586	37 42 59	2591	39 26 47	2596	41 10 28	2401
	α Aquilæ E.	68 42 7	3198	67 15 55	3224	65 50 14	3253	64 25 8	3285
	Fomalhaut E.	91 55 6	2695	90 18 20	2701	88 41 41	2707	87 5 10	2714
20	SUN W.	133 19 27	2741	134 55 12	2749	136 30 47	2756	138 6 12	2764
	Regulus W.	103 47 58	2424	105 30 58	2431	107 13 49	2438	108 56 30	2444
	Spica W.	49 46 55	2430	51 29 47	2436	53 12 30	2443	54 55 4	2449
	α Aquilæ E.	57 29 46	3484	56 9 4	3535	54 49 19	3590	53 30 34	3650
	Fomalhaut E.	79 5 13	2759	77 29 51	2769	75 54 43	2782	74 19 51	2794
	α Pegasi E.	100 55 47	2623	99 17 23	2628	97 39 6	2633	96 0 56	2638
21	Spica W.	63 25 28	2485	65 7 2	2493	66 48 25	2500	68 29 38	2509
	SATURN W.	43 55 52	2559	45 35 44	2562	47 15 31	2566	48 55 12	2571
	Fomalhaut E.	66 30 2	2672	64 57 7	2691	63 24 37	2691	61 52 32	2692
	α Pegasi E.	87 52 12	2674	86 14 57	2683	84 37 54	2692	83 1 3	2701
22	Spica W.	76 52 48	2551	78 32 50	2560	80 12 40	2569	81 52 17	2579
	SATURN W.	57 11 46	2602	58 50 38	2610	60 29 20	2618	62 7 51	2625
	Fomalhaut E.	54 19 31	3065	52 50 38	3096	51 22 24	3131	49 54 52	3169
	α Pegasi E.	75 0 10	2756	73 24 45	2769	71 49 36	2782	70 14 45	2796

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Spica W.	83 31 41	2588	85 10 52	2598	86 49 50	2607	88 28 35	2617
	SATURN W.	63 46 12	2633	65 24 22	2642	67 2 20	2651	68 40 6	2660
	Antares W.	37 38 11	2585	39 17 27	2594	40 56 30	2604	42 35 20	2614
	Fomalhaut E.	48 28 6	3210	47 2 9	3234	45 37 4	3302	44 12 55	3353
	α Pegasi E.	68 40 12	2811	67 5 58	2825	65 32 3	2842	63 58 29	2858
24	Spica W.	96 38 58	2668	98 16 21	2678	99 53 30	2689	101 30 25	2700
	SATURN W.	76 45 51	2707	78 22 21	2717	79 58 38	2728	81 34 41	2738
	Antares W.	50 46 5	2665	52 23 32	2675	54 0 46	2685	55 37 46	2696
	α Pegasi E.	56 16 18	2954	54 45 7	2976	53 14 24	3000	51 44 11	3024
	α Arietis E.	97 21 33	2681	95 44 27	2692	94 7 36	2701	92 30 58	2713
	MARS E.	106 24 6	2926	104 52 20	2936	103 20 47	2947	101 49 28	2958
25	SATURN W.	89 31 28	2792	91 6 7	2802	92 40 32	2813	94 14 43	2825
	Antares W.	63 39 11	2750	65 14 45	2760	66 50 5	2771	68 25 11	2782
	α Arietis E.	84 31 22	2766	82 56 9	2777	81 21 11	2788	79 46 27	2799
	MARS E.	94 16 17	3014	92 46 21	3024	91 16 38	3035	89 47 9	3047
26	SATURN W.	102 2 0	2880	103 34 45	2891	105 7 15	2902	106 39 31	2913
	Antares W.	76 17 7	2836	77 50 48	2846	79 24 16	2856	80 57 31	2867
	α Arietis E.	71 56 24	2854	70 23 6	2865	68 50 2	2876	67 17 12	2886
	MARS E.	82 23 14	3104	80 55 9	3114	79 27 17	3125	77 59 39	3138
	Aldebaran E.	103 42 49	2914	102 10 48	2924	100 38 59	2933	99 7 22	2943
27	Antares W.	88 40 27	2917	90 12 24	2926	91 44 10	2935	93 15 44	2944
	α Aquilæ W.	44 47 13	4582	45 49 53	4596	46 53 40	4617	47 58 28	4634
	α Arietis E.	59 36 25	2939	58 4 56	2949	56 33 39	2959	55 2 35	2969
	MARS E.	70 44 51	3192	69 18 32	3203	67 52 26	3213	66 26 32	3223
	Aldebaran E.	91 32 21	2991	90 1 57	3001	88 31 45	3010	87 1 45	3019
28	Antares W.	100 50 48	2986	102 21 18	2994	103 51 38	3002	105 21 49	3008
	α Aquilæ W.	53 35 8	4139	54 44 32	4154	55 54 30	4173	57 4 58	4183
	α Arietis E.	47 30 19	3018	46 0 28	3026	44 30 48	3035	43 1 19	3044
	MARS E.	59 20 0	3272	57 55 16	3281	56 30 42	3290	55 6 19	3300
	Aldebaran E.	79 34 32	3064	78 5 38	3072	76 36 54	3081	75 8 21	3088
29	α Aquilæ W.	63 3 44	3931	64 16 32	3944	65 29 38	3958	66 43 0	3983
	Fomalhaut W.	37 3 1	4034	38 14 7	3975	39 26 11	3982	40 39 8	3975
	MARS E.	48 6 55	3340	46 43 30	3349	45 20 15	3356	43 57 8	3364
	Aldebaran E.	67 47 57	3126	66 20 19	3133	64 52 50	3140	63 25 29	3148
	SUN E.	125 43 7	3403	124 20 54	3408	122 58 47	3414	121 36 46	3417
30	α Aquilæ W.	72 53 13	3824	74 7 50	3816	75 22 36	3806	76 37 32	3798
	Fomalhaut W.	46 54 35	3607	48 11 25	3601	49 28 43	3606	50 46 28	3603
	MARS E.	37 3 43	3401	35 41 28	3409	34 19 22	3417	32 57 25	3425
	Aldebaran E.	56 10 42	3178	54 44 6	3173	53 17 37	3169	51 51 15	3166
	SUN E.	114 47 43	3433	113 26 4	3435	112 4 27	3437	110 42 52	3438
31	α Aquilæ W.	82 54 7	3704	84 0 46	3709	85 25 31	3715	86 41 22	3718
	Fomalhaut W.	57 20 57	3527	58 40 51	3511	60 1 3	3496	61 21 32	3481
	Aldebaran E.	44 41 11	3226	43 15 33	3213	41 50 3	3201	40 24 42	3208
	SUN E.	103 55 0	3474	102 33 22	3432	101 11 42	3430	99 40 59	3426

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Spica W.	90 7 7	2627	91 45 25	2657	93 23 30	2647	95 1 21	2657
	SATURN W.	70 17 40	2669	71 55 2	2678	73 32 11	2688	75 9 7	2697
	Antares W.	44 13 56	2624	45 52 19	2634	47 30 28	2644	49 8 23	2654
	Fomalhaut E.	42 49 47	3412	41 27 44	3476	40 6 53	3545	38 47 19	3613
	α Pegasi E.	62 25 16	2875	60 52 25	2894	59 19 58	2912	57 47 55	2933
24	Spica W.	103 7 5	2710	104 43 31	2721	106 19 43	2732	107 55 41	2743
	SATURN W.	83 10 30	2749	84 46 5	2759	86 21 27	2769	87 56 35	2781
	Antares W.	57 14 31	2707	58 51 2	2717	60 27 19	2728	62 3 22	2738
	α Pegasi E.	50 14 28	3051	48 45 18	3078	47 16 42	3109	45 48 43	3141
	α Arietis E.	90 54 35	2722	89 18 25	2734	87 42 30	2744	86 6 49	2755
	MARS E.	100 18 22	2969	98 47 30	2980	97 16 52	2991	95 46 28	3002
25	SATURN W.	95 48 39	2835	97 22 21	2847	98 55 48	2858	100 29 1	2869
	Antares W.	70 0 2	2792	71 34 40	2804	73 9 3	2815	74 43 12	2825
	α Arietis E.	78 11 58	2810	76 37 43	2821	75 3 42	2832	73 29 56	2843
	MARS E.	88 17 54	3058	86 48 53	3069	85 20 6	3081	83 51 33	3092
26	SATURN W.	108 21 33	2924	109 43 21	2935	111 14 55	2946	112 46 15	2958
	Antares W.	82 30 32	2877	84 3 20	2887	85 35 55	2898	87 8 17	2907
	α Arietis E.	65 44 35	2897	64 12 12	2908	62 40 3	2918	61 8 7	2929
	MARS E.	76 32 15	3148	75 5 4	3160	73 38 7	3171	72 11 23	3181
	Aldebaran E.	97 35 58	2952	96 4 45	2962	94 33 45	2972	93 2 57	2981
27	Antares W.	94 47 7	2953	96 18 19	2962	97 49 19	2970	99 20 9	2979
	α Aquilæ W.	49 4 13	4318	50 10 49	4266	51 18 13	4220	52 26 20	4177
	α Arietis E.	53 31 43	2979	52 1 4	2989	50 30 37	2998	49 0 22	3008
	MARS E.	65 0 50	3233	63 35 20	3243	62 10 2	3253	60 44 55	3263
	Aldebaran E.	85 31 56	3028	84 2 18	3038	82 32 52	3047	81 3 37	3055
28	Antares W.	106 51 52	3015	108 21 46	3022	109 51 32	3027	111 21 11	3033
	α Aquilæ W.	58 15 55	4017	59 27 18	3992	60 39 5	3970	61 51 14	3949
	α Arietis E.	41 32 1	3053	40 2 54	3062	38 33 58	3071	37 5 13	3079
	MARS E.	53 42 7	3308	52 18 5	3316	50 54 12	3325	49 30 29	3332
	Aldebaran E.	73 39 57	3096	72 11 43	3105	70 43 39	3112	69 15 44	3119
29	α Aquilæ W.	67 56 37	3869	69 10 28	3857	70 24 31	3846	71 38 46	3834
	Fomalhaut W.	41 52 53	3832	43 7 22	3793	44 22 31	3759	45 38 16	3727
	MARS E.	42 34 10	3371	41 11 20	3379	39 48 39	3386	38 26 7	3393
	Aldebaran E.	61 58 17	3153	60 31 12	3160	59 4 15	3166	57 37 25	3172
	SUN E.	120 14 49	3422	118 52 57	3425	117 31 9	3429	116 9 25	3431
30	α Aquilæ W.	77 52 36	3791	79 7 48	3783	80 23 8	3777	81 38 34	3770
	Fomalhaut W.	52 4 38	3601	53 23 11	3581	54 42 6	3562	56 1 22	3545
	MARS E.	31 35 37	3434	30 13 59	3445	28 52 33	3456	27 31 20	3470
	Aldebaran E.	50 25 0	3201	48 58 52	3207	47 32 51	3213	46 6 57	3220
	SUN E.	109 21 18	3438	107 59 44	3438	106 38 10	3438	105 16 36	3436
31	α Aquilæ W.	87 57 18	3744	89 13 19	3740	90 29 24	3735	91 45 34	3732
	Fomalhaut W.	62 42 17	3466	64 3 19	3453	65 24 36	3438	66 46 9	3425
	Aldebaran E.	38 59 30	3258	37 34 29	3268	36 9 40	3279	34 45 4	3292
	SUN E.	98 28 12	3423	97 6 21	3418	95 44 25	3414	94 22 24	3408

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.		Subtracted from Apparent Time.	
		^h ^m ^s	^s	[°] ['] ["]	["]	['] ["]	^s	^m ^s	^s
Sat.	1	8 48 26.51	9.691	N. 17 50 31.2	-38.32	15 48.11	66.58	6 3.56	0.165
SUN.	2	8 52 18.80	9.667	17 35 2.8	39.05	15 48.24	66.50	5 59.31	0.189
Mon.	3	8 56 10.51	9.642	17 19 17.1	39.76	15 48.37	66.41	5 54.47	0.214
Tues.	4	9 0 1.62	9.618	17 3 14.5	-40.46	15 48.50	66.32	5 49.05	0.238
Wed.	5	9 3 52.16	9.593	16 46 55.1	41.15	15 48.64	66.24	5 43.04	0.262
Thur.	6	9 7 42.11	9.569	16 30 19.5	41.82	15 48.78	66.15	5 36.45	0.287
Frid.	7	9 11 31.48	9.545	16 13 27.7	-42.48	15 48.93	66.07	5 29.28	0.311
Sat.	8	9 15 20.26	9.521	15 56 20.3	43.13	15 49.08	65.98	5 21.53	0.335
SUN.	9	9 19 8.46	9.496	15 38 57.5	43.76	15 49.24	65.90	5 13.20	0.359
Mon.	10	9 22 56.09	9.472	15 21 19.6	-44.38	15 49.40	65.82	5 4.30	0.383
Tues.	11	9 26 43.14	9.449	15 3 27.0	44.99	15 49.57	65.73	4 54.82	0.407
Wed.	12	9 30 29.62	9.425	14 45 20.0	45.58	15 49.74	65.65	4 44.77	0.431
Thur.	13	9 34 15.54	9.402	14 26 59.0	-46.16	15 49.92	65.58	4 34.16	0.454
Frid.	14	9 38 0.90	9.379	14 8 24.2	46.73	15 50.10	65.50	4 23.00	0.477
Sat.	15	9 41 45.71	9.356	13 49 36.1	47.28	15 50.28	65.42	4 11.28	0.499
SUN.	16	9 45 29.98	9.334	13 30 34.9	-47.82	15 50.47	65.35	3 59.03	0.521
Mon.	17	9 49 13.72	9.312	13 11 20.9	48.34	15 50.66	65.27	3 46.25	0.543
Tues.	18	9 52 56.93	9.290	12 51 54.6	48.85	15 50.86	65.20	3 32.95	0.564
Wed.	19	9 56 39.65	9.269	12 32 16.0	-49.35	15 51.06	65.13	3 19.14	0.585
Thur.	20	10 0 21.87	9.249	12 12 25.7	49.84	15 51.26	65.06	3 4.85	0.605
Frid.	21	10 4 3.61	9.230	11 52 23.8	50.31	15 51.46	64.99	2 50.07	0.625
Sat.	22	10 7 44.90	9.211	11 32 10.8	-50.77	15 51.66	64.93	2 34.84	0.644
SUN.	23	10 11 25.73	9.193	11 11 46.7	51.22	15 51.87	64.87	2 19.17	0.662
Mon.	24	10 15 6.14	9.176	10 51 12.1	51.66	15 52.08	64.81	2 3.07	0.679
Tues.	25	10 18 46.14	9.159	10 30 27.1	-52.08	15 52.29	64.75	1 46.56	0.696
Wed.	26	10 22 25.75	9.143	10 9 32.1	52.49	15 52.50	64.69	1 29.66	0.712
Thur.	27	10 26 4.99	9.128	9 48 27.2	52.90	15 52.71	64.63	1 12.40	0.727
Frid.	28	10 29 43.88	9.113	9 27 13.0	-53.29	15 52.93	64.58	0 54.77	0.741
Sat.	29	10 33 22.42	9.100	9 5 49.5	53.66	15 53.15	64.53	0 36.82	0.755
SUN.	30	10 37 0.65	9.087	8 44 17.2	54.02	15 53.37	64.48	0 18.54	0.768
Mon.	31	10 40 38.58	9.075	8 22 36.4	54.37	15 53.59	64.43	0 0.04	0.780
Tues.	32	10 44 16.22	9.063	N. 8 0 47.4	-54.71	15 53.81	64.39	0 18.90	0.791

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.									
Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.	
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.				
		h m s	s	° ' "	"	m s	s	h m s	
Sat. <i>SUN.</i>	1	8 48 25.53	9.692	N. 17 50 35.0	-38.32	6 3.58	0.165	8 42 21.95	
Mon.	2	8 52 17.84	9.667	17 35 6.6	39.04	5 59.33	0.190	8 46 18.51	
	3	8 56 9.56	9.643	17 19 21.0	39.76	5 54.49	0.214	8 50 15.06	
Tues.	4	9 0 0.69	9.618	17 3 18.3	-40.46	5 49.07	0.238	8 54 11.62	
Wed.	5	9 3 51.24	9.594	16 46 59.0	41.15	5 43.06	0.262	8 58 8.18	
Thur.	6	9 7 41.21	9.570	16 30 23.3	41.82	5 36.48	0.287	9 2 4.74	
Frid.	7	9 11 30.60	9.546	16 13 31.6	-42.48	5 29.31	0.311	9 6 1.29	
Sat. <i>SUN.</i>	8	9 15 19.41	9.522	15 56 24.1	43.13	5 21.56	0.335	9 9 57.85	
	9	9 19 7.63	9.498	15 39 1.2	43.77	5 13.23	0.359	9 13 54.40	
Mon.	10	9 22 55.29	9.474	15 21 23.3	-44.39	5 4.33	0.383	9 17 50.96	
Tues.	11	9 26 42.37	9.450	15 3 30.6	44.99	4 54.85	0.407	9 21 47.52	
Wed.	12	9 30 28.88	9.426	14 45 23.6	45.59	4 44.81	0.431	9 25 44.07	
Thur.	13	9 34 14.82	9.403	14 27 2.4	-46.17	4 34.20	0.454	9 29 40.63	
Frid.	14	9 38 0.21	9.380	14 8 27.6	46.73	4 23.03	0.477	9 33 37.18	
Sat.	15	9 41 45.06	9.357	13 49 39.3	47.28	4 11.32	0.499	9 37 33.74	
<i>SUN.</i>	16	9 45 29.36	9.333	13 30 38.0	-47.82	3 59.07	0.521	9 41 30.29	
Mon.	17	9 49 13.13	9.313	13 11 23.9	48.35	3 46.28	0.543	9 45 26.85	
Tues.	18	9 52 56.38	9.292	12 51 57.4	48.86	3 32.98	0.564	9 49 23.40	
Wed.	19	9 56 39.13	9.271	12 32 18.7	-49.36	3 19.17	0.585	9 53 19.96	
Thur.	20	10 0 21.39	9.251	12 12 28.2	49.84	3 4.88	0.605	9 57 16.51	
Frid.	21	10 4 3.17	9.231	11 52 26.2	50.32	2 50.10	0.625	10 1 13.07	
Sat. <i>SUN.</i>	22	10 7 44.50	9.212	11 32 12.9	-50.78	2 34.87	0.644	10 5 9.62	
Mon.	23	10 11 25.37	9.194	11 11 48.7	51.23	2 19.19	0.662	10 9 6.18	
	24	10 15 5.82	9.177	10 51 13.8	51.67	2 3.09	0.679	10 13 2.73	
Tues.	25	10 18 45.87	9.160	10 30 28.6	-52.09	1 46.58	0.696	10 16 59.29	
Wed.	26	10 22 25.52	9.144	10 9 33.3	52.51	1 29.68	0.712	10 20 55.84	
Thur.	27	10 26 4.81	9.129	9 48 28.2	52.91	1 12.41	0.727	10 24 52.40	
Frid.	28	10 29 43.74	9.115	9 27 13.7	-53.30	0 54.78	0.741	10 28 48.95	
Sat. <i>SUN.</i>	29	10 33 22.33	9.101	9 5 50.0	53.67	0 36.82	0.755	10 32 45.51	
Mon.	30	10 37 0.60	9.088	8 44 17.4	54.03	0 18.54	0.768	10 36 42.06	
	31	10 40 38.58	9.076	8 22 36.4	54.38	0 0.04	0.780	10 40 38.62	
Tues.	32	10 44 16.27	9.065	N. 8 0 47.0	-54.72	0 18.90	0.792	10 44 35.17	
NOTE. —The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.								Diff. for 1 Hour, +9°.8565. (Table III.)	

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	214	129 40 3.4	39 23.4	143.59	+ 0.58	0.0063151	-23.4	15 15 7.71
2	215	130 37 30.1	36 49.8	143.64	0.61	0.0062581	24.1	15 11 11.80
3	216	131 34 58.1	34 17.6	143.69	0.60	0.0061992	24.9	15 7 15.89
4	217	132 32 27.4	31 46.7	143.74	+ 0.55	0.0061383	-25.8	15 3 19.98
5	218	133 29 57.8	29 17.0	143.79	0.49	0.0060752	26.7	14 59 24.07
6	219	134 27 29.6	26 48.6	143.85	0.40	0.0060099	27.6	14 55 28.16
7	220	135 25 2.5	24 21.4	143.90	+ 0.29	0.0059424	-28.6	14 51 32.25
8	221	136 22 36.6	21 55.3	143.95	0.16	0.0058725	29.6	14 47 36.34
9	222	137 20 11.9	19 30.5	144.00	+ 0.03	0.0058004	30.6	14 43 40.43
10	223	138 17 48.3	17 6.7	144.04	- 0.10	0.0057259	-31.5	14 39 44.52
11	224	139 15 25.8	14 44.1	144.09	0.21	0.0056492	32.4	14 35 48.61
12	225	140 13 4.4	12 22.5	144.13	0.32	0.0055703	33.3	14 31 52.70
13	226	141 10 44.0	10 2.0	144.17	- 0.41	0.0054894	-34.1	14 27 56.79
14	227	142 8 24.6	7 42.5	144.22	0.48	0.0054066	34.9	14 24 0.88
15	228	143 6 6.3	5 24.0	144.26	0.51	0.0053220	35.6	14 20 4.97
16	229	144 3 49.1	3 6.7	144.30	- 0.52	0.0052356	-36.3	14 16 9.06
17	230	145 1 32.9	0 50.3	144.35	0.49	0.0051479	36.9	14 12 13.15
18	231	145 59 17.7	58 35.0	144.40	0.43	0.0050586	37.4	14 8 17.24
19	232	146 57 3.7	56 20.9	144.45	- 0.35	0.0049683	-37.9	14 4 21.34
20	233	147 54 51.0	54 8.0	144.50	0.25	0.0048768	38.3	14 0 25.43
21	234	148 52 39.6	51 56.3	144.55	- 0.13	0.0047843	38.7	13 56 29.52
22	235	149 50 29.5	49 46.0	144.61	0.00	0.0046911	-39.0	13 52 33.61
23	236	150 48 20.7	47 37.2	144.67	+ 0.14	0.0045969	39.4	13 48 37.70
24	237	151 46 13.3	45 29.8	144.73	0.27	0.0045020	39.7	13 44 41.79
25	238	152 44 7.5	43 23.9	144.80	+ 0.39	0.0044062	-40.0	13 40 45.88
26	239	153 42 3.5	41 19.7	144.87	0.49	0.0043099	40.3	13 36 49.97
27	240	154 40 1.3	39 17.4	144.94	0.57	0.0042127	40.6	13 32 54.06
28	241	155 38 0.7	37 16.7	145.02	+ 0.63	0.0041147	-41.0	13 28 58.16
29	242	156 36 2.0	35 17.9	145.10	0.65	0.0040158	41.4	13 25 2.25
30	243	157 34 5.2	33 21.0	145.18	0.66	0.0039159	41.9	13 21 6.34
31	244	158 32 10.4	31 26.0	145.26	0.63	0.0038148	42.4	13 17 10.43
32	245	159 30 17.6	29 33.1	145.34	+ 0.57	0.0037126	-42.9	13 13 14.52
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st .								
Diff. for 1 Hour, —9 ^h .8296. (Table II.)								

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	14 51.4	14 54.0	54 24.8	+0.68	54 34.2	+0.89	18 1.0	1.94	21.7
2	14 57.2	15 1.1	54 46.1	1.09	55 0.4	1.29	18 49.4	2.10	22.7
3	15 5.6	15 10.7	55 17.0	1.47	55 35.7	1.64	19 41.7	2.25	23.7
4	15 16.3	15 22.4	55 56.3	+1.78	56 18.5	+1.90	20 37.3	2.37	24.7
5	15 28.8	15 35.3	56 41.9	1.98	57 6.1	2.03	21 34.7	2.41	25.7
6	15 42.0	15 48.7	57 30.6	2.04	57 55.1	2.01	22 32.2	2.37	26.7
7	15 55.2	16 1.3	58 18.9	+1.94	58 41.6	+1.82	23 28.1	2.28	27.7
8	16 7.1	16 12.2	59 2.6	1.66	59 21.4	1.46	0		28.7
9	16 16.6	16 20.2	59 37.6	1.23	59 50.9	0.98	0 21.7	2.18	0.3
10	16 23.0	16 24.9	60 1.0	+0.70	60 7.8	+0.43	1 13.1	2.10	1.3
11	16 25.8	16 25.8	60 11.3	+0.15	60 11.4	-0.13	2 3.0	2.07	2.3
12	16 25.0	16 23.4	60 8.5	-0.37	60 2.6	0.59	2 52.7	2.08	3.3
13	16 21.1	16 18.2	59 54.2	-0.79	59 43.7	-0.95	3 43.3	2.15	4.3
14	16 14.9	16 11.1	59 31.4	1.09	59 17.5	1.20	4 36.0	2.25	5.3
15	16 7.1	16 2.8	59 2.6	1.28	58 46.9	1.33	5 31.4	2.37	6.3
16	15 58.3	15 53.9	58 30.6	-1.37	58 14.1	-1.38	6 29.3	2.45	7.3
17	15 49.3	15 44.8	57 57.5	1.38	57 41.0	1.38	7 28.6	2.47	8.3
18	15 40.3	15 35.9	57 24.4	1.37	57 8.2	1.34	8 27.3	2.40	9.3
19	15 31.6	15 27.3	56 52.3	-1.31	56 36.7	-1.29	9 23.5	2.27	10.3
20	15 23.2	15 19.1	56 21.4	1.26	56 6.5	1.22	10 15.9	2.10	11.3
21	15 15.2	15 11.4	55 52.1	1.18	55 38.1	1.14	11 4.3	1.94	12.3
22	15 7.7	15 4.2	55 24.7	-1.09	55 11.9	-1.05	11 49.0	1.80	13.3
23	15 1.0	14 57.9	54 59.8	0.98	54 48.5	0.90	12 31.0	1.71	14.3
24	14 55.0	14 52.5	54 38.1	0.82	54 28.8	0.72	13 11.2	1.66	15.3
25	14 50.4	14 48.6	54 20.9	-0.60	54 14.3	-0.49	13 50.8	1.65	16.3
26	14 47.2	14 46.3	54 9.2	0.35	54 5.9	-0.20	14 30.7	1.68	17.3
27	14 45.9	14 46.0	54 4.4	-0.04	54 5.0	+0.14	15 11.9	1.76	18.3
28	14 46.8	14 48.1	54 7.7	+0.32	54 12.6	+0.51	15 55.4	1.87	19.3
29	14 50.1	14 52.8	54 20.0	0.71	54 29.7	0.92	16 41.8	2.01	20.3
30	14 56.1	15 0.1	54 42.0	1.13	54 56.7	1.33	17 31.7	2.15	21.3
31	15 4.8	15 10.0	55 13.8	1.52	55 33.2	1.71	18 24.8	2.27	22.3
32	15 15.9	15 22.4	55 54.8	+1.88	56 18.4	+2.04	19 20.2	2.34	23.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 1.					MONDAY 3.				
0	2 10 18.19	1.9503	N.18 28 13.2	10.822	0	3 50 16.97	2.2247	N.25 28 33.9	6.295
1	2 12 15.36	1.9552	18 39 0.4	10.751	1	3 52 30.63	2.2307	25 34 48.0	6.175
2	2 14 12.82	1.9602	18 49 43.3	10.678	2	3 54 44.65	2.2366	25 40 54.9	6.053
3	2 16 10.58	1.9652	19 0 21.8	10.605	3	3 56 59.02	2.2425	25 46 54.4	5.930
4	2 18 8.64	1.9703	19 10 55.9	10.532	4	3 59 13.75	2.2484	25 52 46.5	5.807
5	2 20 7.01	1.9754	19 21 25.6	10.457	5	4 1 28.83	2.2542	25 58 31.2	5.682
6	2 22 5.69	1.9806	19 31 50.8	10.382	6	4 3 44.26	2.2601	26 4 8.4	5.557
7	2 24 4.68	1.9858	19 42 11.4	10.305	7	4 6 0.04	2.2659	26 9 38.0	5.439
8	2 26 3.98	1.9910	19 52 27.4	10.228	8	4 8 16.17	2.2717	26 14 59.9	5.301
9	2 28 3.60	1.9963	20 2 38.8	10.150	9	4 10 32.64	2.2774	26 20 14.1	5.172
10	2 30 3.54	2.0017	20 12 45.4	10.070	10	4 12 49.46	2.2832	26 25 20.5	5.042
11	2 32 3.80	2.0071	20 22 47.2	9.990	11	4 15 6.62	2.2888	26 30 19.1	4.911
12	2 34 4.39	2.0126	20 32 44.2	9.909	12	4 17 24.11	2.2943	26 35 9.8	4.778
13	2 36 5.31	2.0180	20 42 36.3	9.827	13	4 19 41.94	2.2999	26 39 52.5	4.644
14	2 38 6.55	2.0234	20 52 23.4	9.743	14	4 22 0.10	2.3055	26 44 27.1	4.509
15	2 40 8.12	2.0290	21 2 5.5	9.659	15	4 24 18.60	2.3111	26 48 53.6	4.374
16	2 42 10.03	2.0346	21 11 42.5	9.574	16	4 26 37.43	2.3164	26 53 12.0	4.238
17	2 44 12.28	2.0402	21 21 14.4	9.488	17	4 28 56.57	2.3217	26 57 22.2	4.100
18	2 46 14.86	2.0458	21 30 41.1	9.401	18	4 31 16.03	2.3270	27 1 24.0	3.961
19	2 48 17.78	2.0516	21 40 2.5	9.313	19	4 33 35.81	2.3323	27 5 17.5	3.822
20	2 50 21.05	2.0574	21 49 18.6	9.224	20	4 35 55.90	2.3375	27 9 2.6	3.681
21	2 52 24.67	2.0632	21 58 29.4	9.134	21	4 38 16.31	2.3427	27 12 39.2	3.539
22	2 54 28.63	2.0689	22 7 34.7	9.042	22	4 40 37.02	2.3477	27 16 7.3	3.397
23	2 56 32.94	2.0747	N.22 16 34.5	8.950	23	4 42 58.03	2.3527	N.27 19 26.8	3.253
SUNDAY 2.					TUESDAY 4.				
0	2 58 37.59	2.0804	N.22 25 28.7	8.857	0	4 45 19.34	2.3576	N.27 22 37.7	3.109
1	3 0 42.59	2.0863	22 34 17.3	8.762	1	4 47 40.94	2.3624	27 25 39.9	2.963
2	3 2 47.95	2.0923	22 43 0.2	8.667	2	4 50 2.83	2.3672	27 28 33.3	2.816
3	3 4 53.67	2.0982	22 51 37.3	8.570	3	4 52 25.00	2.3718	27 31 17.8	2.668
4	3 6 59.74	2.1042	23 0 8.6	8.473	4	4 54 47.45	2.3765	27 33 53.5	2.521
5	3 9 6.17	2.1102	23 8 34.1	8.375	5	4 57 10.18	2.3811	27 36 20.3	2.372
6	3 11 12.96	2.1162	23 16 53.6	8.275	6	4 59 33.18	2.3856	27 38 38.1	2.222
7	3 13 20.11	2.1221	23 25 7.1	8.174	7	5 1 56.45	2.3899	27 40 46.9	2.071
8	3 15 27.61	2.1280	23 33 14.5	8.072	8	5 4 19.97	2.3941	27 42 46.6	1.918
9	3 17 35.47	2.1341	23 41 15.8	7.970	9	5 6 43.74	2.3983	27 44 37.1	1.766
10	3 19 43.70	2.1402	23 49 10.9	7.866	10	5 9 7.76	2.4024	27 46 18.5	1.613
11	3 21 52.29	2.1462	23 56 59.7	7.761	11	5 11 32.03	2.4064	27 47 50.6	1.458
12	3 24 1.24	2.1522	24 4 42.2	7.655	12	5 13 56.53	2.4103	27 49 13.4	1.303
13	3 26 10.56	2.1583	24 12 18.3	7.547	13	5 16 21.26	2.4141	27 50 26.9	1.147
14	3 28 20.24	2.1643	24 19 47.9	7.439	14	5 18 46.22	2.4179	27 51 31.0	0.991
15	3 30 30.28	2.1703	24 27 11.0	7.330	15	5 21 11.41	2.4216	27 52 25.8	0.834
16	3 32 40.68	2.1764	24 34 27.5	7.219	16	5 23 36.81	2.4251	27 53 11.1	0.676
17	3 34 51.45	2.1825	24 41 37.3	7.107	17	5 26 2.42	2.4284	27 53 46.9	0.517
18	3 37 2.58	2.1885	24 48 40.4	6.995	18	5 28 28.22	2.4317	27 54 13.1	0.357
19	3 39 14.07	2.1946	24 55 36.7	6.881	19	5 30 54.22	2.4349	27 54 29.8	0.197
20	3 41 25.93	2.2007	25 2 26.1	6.766	20	5 33 20.41	2.4380	27 54 36.8	+ 0.037
21	3 43 38.15	2.2067	25 9 8.6	6.650	21	5 35 46.78	2.4410	27 54 34.2	- 0.124
22	3 45 50.73	2.2127	25 15 44.1	6.533	22	5 38 13.33	2.4439	27 54 21.9	0.286
23	3 48 3.67	2.2187	25 22 12.6	6.415	23	5 40 40.05	2.4467	27 53 59.9	0.448
24	3 50 16.97	2.2247	N.25 28 33.9	6.295	24	5 43 6.93	2.4493	N.27 53 28.1	0.612

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 5.					FRIDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	5 43 6.93	2.4493	N.27 53 28.1	0.612	0	7 41 31.05	2.4413	N.24 12 39.7	8.531
1	5 45 33.96	2.4518	27 52 46.5	0.775	1	7 43 57.45	2.4387	24 4 3.2	8.687
2	5 48 1.15	2.4543	27 51 55.1	0.939	2	7 46 23.69	2.4360	23 55 17.3	8.842
3	5 50 28.48	2.4566	27 50 53.8	1.104	3	7 48 49.77	2.4332	23 46 22.2	8.995
4	5 52 55.94	2.4587	27 49 42.6	1.268	4	7 51 15.68	2.4303	23 37 17.9	9.148
5	5 55 23.53	2.4608	27 48 21.6	1.433	5	7 53 41.41	2.4274	23 28 4.4	9.300
6	5 57 51.24	2.4628	27 46 50.7	1.598	6	7 56 6.97	2.4245	23 18 41.9	9.451
7	6 0 19.07	2.4647	27 45 9.8	1.765	7	7 58 32.35	2.4214	23 9 10.3	9.602
8	6 2 47.00	2.4664	27 43 18.9	1.931	8	8 0 57.54	2.4183	22 59 29.7	9.750
9	6 5 15.03	2.4679	27 41 18.1	2.097	9	8 3 22.54	2.4151	22 49 40.3	9.897
10	6 7 43.15	2.4694	27 39 7.3	2.264	10	8 5 47.35	2.4118	22 39 42.1	10.044
11	6 10 11.36	2.4707	27 36 46.4	2.432	11	8 8 11.96	2.4086	22 29 35.0	10.191
12	6 12 39.64	2.4719	27 34 15.4	2.600	12	8 10 36.38	2.4052	22 19 19.2	10.335
13	6 15 7.99	2.4731	27 31 34.4	2.767	13	8 13 0.59	2.4018	22 8 54.8	10.478
14	6 17 36.41	2.4742	27 28 43.4	2.934	14	8 15 24.60	2.3985	21 58 21.8	10.621
15	6 20 4.89	2.4753	27 25 42.3	3.102	15	8 17 48.41	2.3951	21 47 40.2	10.765
16	6 22 33.42	2.4758	27 22 31.1	3.270	16	8 20 12.01	2.3915	21 36 50.2	10.908
17	6 25 1.99	2.4764	27 19 9.9	3.438	17	8 22 35.39	2.3879	21 25 51.8	11.042
18	6 27 30.59	2.4769	27 15 38.6	3.606	18	8 24 58.56	2.3843	21 14 45.1	11.180
19	6 29 59.22	2.4773	27 11 57.2	3.774	19	8 27 21.51	2.3808	21 3 30.2	11.317
20	6 32 27.87	2.4776	27 8 5.7	3.943	20	8 29 44.25	2.3772	20 52 7.1	11.452
21	6 34 56.53	2.4777	27 4 4.1	4.111	21	8 32 6.77	2.3735	20 40 36.0	11.585
22	6 37 25.20	2.4778	26 59 52.4	4.278	22	8 34 29.07	2.3697	20 28 56.9	11.718
23	6 39 53.87	2.4777	N.26 55 30.7	4.446	23	8 36 51.14	2.3660	N.20 17 9.8	11.850
THURSDAY 6.					SATURDAY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	6 42 22.53	2.4773	N.26 50 58.9	4.614	0	8 39 12.99	2.3623	N.20 5 14.9	11.980
1	6 44 51.17	2.4772	26 46 17.0	4.782	1	8 41 34.62	2.3586	19 53 12.2	12.109
2	6 47 19.80	2.4769	26 41 25.0	4.950	2	8 43 56.02	2.3548	19 41 1.8	12.236
3	6 49 48.40	2.4764	26 36 23.0	5.117	3	8 46 17.19	2.3510	19 28 43.9	12.361
4	6 52 16.96	2.4757	26 31 11.0	5.284	4	8 48 38.14	2.3472	19 16 18.5	12.486
5	6 54 45.48	2.4749	26 25 49.0	5.451	5	8 50 58.86	2.3434	19 3 45.6	12.610
6	6 57 13.95	2.4740	26 20 16.9	5.617	6	8 53 19.35	2.3396	18 51 5.3	12.732
7	6 59 42.36	2.4730	26 14 34.9	5.783	7	8 55 39.61	2.3358	18 38 17.8	12.852
8	7 2 10.71	2.4720	26 8 42.9	5.949	8	8 57 59.64	2.3320	18 25 23.1	12.971
9	7 4 39.00	2.4708	26 2 41.0	6.115	9	9 0 19.45	2.3282	18 12 21.3	13.088
10	7 7 7.21	2.4695	25 56 29.1	6.280	10	9 2 39.03	2.3243	17 59 12.5	13.204
11	7 9 35.34	2.4682	25 50 7.4	6.444	11	9 4 58.37	2.3204	17 45 56.8	13.318
12	7 12 3.39	2.4667	25 43 35.8	6.608	12	9 7 17.48	2.3166	17 32 34.3	13.432
13	7 14 31.34	2.4650	25 36 54.4	6.772	13	9 9 36.37	2.3129	17 19 5.0	13.543
14	7 16 59.19	2.4633	25 30 3.2	6.935	14	9 11 55.03	2.3091	17 5 29.1	13.653
15	7 19 26.94	2.4616	25 23 2.2	7.098	15	9 14 13.46	2.3053	16 51 46.7	13.761
16	7 21 54.58	2.4597	25 15 51.4	7.260	16	9 16 31.67	2.3016	16 37 57.8	13.868
17	7 24 22.10	2.4577	25 8 31.0	7.421	17	9 18 49.65	2.2978	16 24 2.6	13.973
18	7 26 49.50	2.4556	25 1 0.9	7.582	18	9 21 7.41	2.2942	16 10 1.1	14.077
19	7 29 16.77	2.4534	24 53 21.2	7.742	19	9 23 24.95	2.2905	15 55 53.4	14.179
20	7 31 43.91	2.4512	24 45 31.9	7.902	20	9 25 42.27	2.2868	15 41 39.6	14.279
21	7 34 10.92	2.4489	24 37 33.0	8.060	21	9 27 59.36	2.2831	15 27 19.9	14.377
22	7 36 37.78	2.4464	24 29 24.7	8.218	22	9 30 16.24	2.2795	15 12 54.3	14.475
23	7 39 4.49	2.4439	24 21 6.9	8.375	23	9 32 32.90	2.2759	14 58 22.9	14.571
24	7 41 31.05	2.4413	N.24 12 39.7	8.531	24	9 34 49.35	2.2723	N.14 43 45.8	14.665

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 9.					TUESDAY 11.				
0	9 34 49.35	2.2723	N. 14 43 45.8	14.665	0	11 20 42.46	2.1636	N. 1 44 1.8	17.152
1	9 37 5.58	2.2688	14 29 3.1	14.757	1	11 22 52.26	2.1630	1 26 52.4	17.161
2	9 39 21.60	2.2653	14 14 14.9	14.847	2	11 25 2.02	2.1624	1 9 42.5	17.168
3	9 41 37.42	2.2619	13 59 21.4	14.936	3	11 27 11.75	2.1620	0 52 32.2	17.173
4	9 43 53.03	2.2584	13 44 22.6	15.024	4	11 29 21.46	2.1617	0 35 21.7	17.177
5	9 46 8.43	2.2550	13 29 18.5	15.111	5	11 31 31.16	2.1615	0 18 11.0	17.179
6	9 48 23.63	2.2517	13 14 9.3	15.194	6	11 33 40.84	2.1613	N. 0 1 0.2	17.179
7	9 50 38.63	2.2483	12 58 55.2	15.276	7	11 35 50.51	2.1612	S. 0 16 10.5	17.177
8	9 52 53.43	2.2451	12 43 36.2	15.357	8	11 38 0.18	2.1612	0 33 21.0	17.173
9	9 55 8.04	2.2419	12 28 12.4	15.436	9	11 40 9.85	2.1613	0 50 31.3	17.168
10	9 57 22.46	2.2387	12 12 43.9	15.513	10	11 42 19.53	2.1614	1 7 41.2	17.161
11	9 59 36.69	2.2355	11 57 10.8	15.588	11	11 44 29.22	2.1616	1 24 50.6	17.152
12	10 1 50.72	2.2323	11 41 33.3	15.662	12	11 46 38.92	2.1618	1 41 59.5	17.142
13	10 4 4.57	2.2294	11 25 51.4	15.734	13	11 48 48.64	2.1622	1 59 7.7	17.130
14	10 6 18.25	2.2265	11 10 5.2	15.805	14	11 50 58.39	2.1628	2 16 15.1	17.116
15	10 8 31.75	2.2236	10 54 14.8	15.873	15	11 53 8.18	2.1634	2 33 21.6	17.100
16	10 10 45.08	2.2207	10 38 20.4	15.940	16	11 55 18.00	2.1640	2 50 27.1	17.082
17	10 12 58.24	2.2179	10 22 22.0	16.006	17	11 57 27.86	2.1647	3 7 31.5	17.063
18	10 15 11.23	2.2152	10 6 19.7	16.069	18	11 59 37.76	2.1654	3 24 34.7	17.042
19	10 17 24.06	2.2125	9 50 13.7	16.130	19	12 1 47.71	2.1663	3 41 36.6	17.020
20	10 19 36.73	2.2098	9 34 4.1	16.190	20	12 3 57.72	2.1673	3 58 37.1	16.996
21	10 21 49.24	2.2072	9 17 50.9	16.248	21	12 6 7.79	2.1683	4 15 36.1	16.970
22	10 24 1.60	2.2047	9 1 34.3	16.305	22	12 8 17.92	2.1694	4 32 33.5	16.942
23	10 26 13.81	2.2022	N. 8 45 14.3	16.360	23	12 10 28.12	2.1706	S. 4 49 29.2	16.912
MONDAY 10.					WEDNESDAY 12.				
0	10 28 25.87	2.1998	N. 8 28 51.1	16.412	0	12 12 38.39	2.1718	S. 5 6 23.0	16.881
1	10 30 37.79	2.1976	8 12 24.8	16.463	1	12 14 48.74	2.1732	5 23 14.9	16.848
2	10 32 49.58	2.1953	7 55 55.5	16.513	2	12 16 59.18	2.1746	5 40 4.8	16.814
3	10 35 1.23	2.1931	7 39 23.2	16.562	3	12 19 9.70	2.1761	5 56 52.6	16.778
4	10 37 12.75	2.1910	7 22 48.1	16.607	4	12 21 20.31	2.1777	6 13 38.2	16.740
5	10 39 24.15	2.1889	7 6 10.4	16.650	5	12 23 31.02	2.1794	6 30 21.4	16.700
6	10 41 35.42	2.1868	6 49 30.1	16.692	6	12 25 41.84	2.1811	6 47 2.2	16.659
7	10 43 46.57	2.1849	6 32 47.3	16.733	7	12 27 52.76	2.1829	7 3 40.5	16.616
8	10 45 57.61	2.1831	6 16 2.1	16.772	8	12 30 3.79	2.1848	7 20 16.1	16.571
9	10 48 8.55	2.1814	5 59 14.6	16.809	9	12 32 14.94	2.1868	7 36 49.0	16.525
10	10 50 19.38	2.1797	5 42 25.0	16.844	10	12 34 26.21	2.1888	7 53 19.1	16.477
11	10 52 30.11	2.1780	5 25 33.3	16.878	11	12 36 37.60	2.1909	8 9 46.3	16.427
12	10 54 40.74	2.1764	5 8 39.6	16.910	12	12 38 49.12	2.1931	8 26 10.4	16.376
13	10 56 51.28	2.1749	4 51 44.1	16.940	13	12 41 0.78	2.1954	8 42 31.4	16.323
14	10 59 1.73	2.1735	4 34 46.8	16.968	14	12 43 12.57	2.1977	8 58 49.2	16.268
15	11 1 12.10	2.1722	4 17 47.9	16.994	15	12 45 24.50	2.2001	9 15 3.6	16.212
16	11 3 22.39	2.1709	4 0 47.5	17.019	16	12 47 36.58	2.2026	9 31 14.6	16.154
17	11 5 32.61	2.1697	3 43 45.6	17.042	17	12 49 48.81	2.2051	9 47 22.1	16.094
18	11 7 42.76	2.1686	3 26 42.5	17.062	18	12 52 1.19	2.2077	10 3 25.9	16.033
19	11 9 52.84	2.1676	3 9 38.2	17.082	19	12 54 13.73	2.2104	10 19 26.0	15.970
20	11 12 2.87	2.1667	2 52 32.7	17.100	20	12 56 26.44	2.2132	10 35 22.3	15.905
21	11 14 12.84	2.1658	2 35 26.2	17.116	21	12 58 39.31	2.2160	10 51 14.6	15.838
22	11 16 22.76	2.1649	2 18 18.8	17.130	22	13 0 52.36	2.2189	11 7 2.9	15.771
23	11 18 32.63	2.1642	2 1 10.6	17.142	23	13 3 5.58	2.2218	11 22 47.1	15.702
24	11 20 42.46	2.1636	N. 1 44 1.8	17.152	24	13 5 18.98	2.2248	S. 11 38 27.2	15.632

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 13.					SATURDAY 15.				
0	13 5 18.98	2.2248	S. 11 38 27.2	15.632	0	14 56 28.73	2.4169	S. 22 17 19.9	10.426
1	13 7 32.56	2.2279	11 54 2.9	15.558	1	14 58 53.87	2.4211	22 27 41.2	10.283
2	13 9 46.33	2.2311	12 9 34.2	15.483	2	15 1 19.26	2.4253	22 37 53.9	10.140
3	13 12 0.29	2.2343	12 25 0.9	15.407	3	15 3 44.91	2.4295	22 47 58.0	9.996
4	13 14 14.45	2.2376	12 40 23.0	15.330	4	15 6 10.80	2.4336	22 57 53.4	9.849
5	13 16 28.80	2.2408	12 55 40.5	15.252	5	15 8 36.94	2.4377	23 7 39.9	9.708
6	13 18 43.35	2.2442	13 10 53.2	15.171	6	15 11 3.33	2.4418	23 17 17.6	9.553
7	13 20 58.11	2.2476	13 26 1.0	15.088	7	15 13 29.96	2.4458	23 26 46.3	9.404
8	13 23 13.07	2.2511	13 41 3.8	15.004	8	15 15 56.82	2.4497	23 36 6.1	9.254
9	13 25 28.24	2.2547	13 56 1.5	14.918	9	15 18 23.92	2.4536	23 45 16.8	9.103
10	13 27 43.63	2.2583	14 10 54.0	14.832	10	15 20 51.25	2.4574	23 54 18.4	8.950
11	13 29 59.24	2.2619	14 25 41.3	14.743	11	15 23 18.81	2.4612	24 3 10.8	8.796
12	13 32 15.06	2.2655	14 40 23.2	14.653	12	15 25 46.60	2.4650	24 11 53.9	8.641
13	13 34 31.10	2.2693	14 54 59.7	14.562	13	15 28 14.61	2.4687	24 20 27.7	8.486
14	13 36 47.38	2.2732	15 9 30.6	14.468	14	15 30 42.84	2.4723	24 28 52.2	8.329
15	13 39 3.89	2.2771	15 23 55.8	14.373	15	15 33 11.29	2.4759	24 37 7.2	8.171
16	13 41 20.63	2.2809	15 38 15.3	14.277	16	15 35 39.95	2.4793	24 45 12.7	8.012
17	13 43 37.60	2.2848	15 52 29.0	14.178	17	15 38 8.81	2.4827	24 53 8.7	7.853
18	13 45 54.80	2.2887	16 6 36.7	14.078	18	15 40 37.88	2.4861	25 0 55.1	7.692
19	13 48 12.24	2.2927	16 20 38.4	13.978	19	15 43 7.15	2.4894	25 8 31.8	7.531
20	13 50 29.93	2.2968	16 34 34.1	13.877	20	15 45 36.61	2.4926	25 15 58.8	7.369
21	13 52 47.86	2.3009	16 48 23.6	13.773	21	15 48 6.26	2.4957	25 23 16.1	7.207
22	13 55 6.04	2.3050	17 2 6.8	13.667	22	15 50 36.09	2.4987	25 30 23.6	7.043
23	13 57 24.46	2.3091	S. 17 15 43.6	13.559	23	15 53 6.11	2.5017	S. 25 37 21.2	6.878
FRIDAY 14.					SUNDAY 16.				
0	13 59 43.13	2.3133	S. 17 29 13.9	13.451	0	15 55 36.30	2.5045	S. 25 44 9.0	6.713
1	14 2 2.05	2.3175	17 42 37.7	13.342	1	15 58 6.65	2.5073	25 50 46.8	6.547
2	14 4 21.23	2.3217	17 55 54.9	13.230	2	16 0 37.17	2.5100	25 57 14.6	6.380
3	14 6 40.66	2.3259	18 9 5.3	13.117	3	16 3 7.85	2.5126	26 3 32.4	6.212
4	14 9 0.34	2.3302	18 22 8.9	13.002	4	16 5 38.68	2.5151	26 9 40.1	6.044
5	14 11 20.28	2.3345	18 35 5.6	12.887	5	16 8 9.66	2.5174	26 15 37.7	5.876
6	14 13 40.48	2.3388	18 47 55.3	12.769	6	16 10 40.77	2.5197	26 21 25.2	5.707
7	14 16 0.94	2.3432	19 0 37.9	12.651	7	16 13 12.02	2.5219	26 27 2.5	5.537
8	14 18 21.66	2.3475	19 13 13.4	12.531	8	16 15 43.40	2.5239	26 32 29.6	5.366
9	14 20 42.64	2.3518	19 25 41.6	12.409	9	16 18 14.89	2.5258	26 37 46.4	5.195
10	14 23 3.88	2.3562	19 38 2.5	12.287	10	16 20 46.50	2.5277	26 42 53.0	5.024
11	14 25 25.38	2.3606	19 50 16.0	12.163	11	16 23 18.22	2.5296	26 47 49.3	4.852
12	14 27 47.15	2.3650	20 2 22.0	12.037	12	16 25 50.05	2.5313	26 52 35.2	4.679
13	14 30 9.18	2.3693	20 14 20.4	11.910	13	16 28 21.97	2.5328	26 57 10.8	4.507
14	14 32 31.47	2.3737	20 26 11.2	11.782	14	16 30 53.98	2.5341	27 1 36.0	4.333
15	14 34 54.02	2.3780	20 37 54.2	11.652	15	16 33 26.06	2.5353	27 5 50.8	4.160
16	14 37 16.83	2.3824	20 49 29.4	11.521	16	16 35 58.21	2.5365	27 9 55.2	3.986
17	14 39 39.91	2.3868	21 0 56.7	11.388	17	16 38 30.44	2.5377	27 13 49.1	3.812
18	14 42 3.25	2.3912	21 12 16.0	11.254	18	16 41 2.73	2.5386	27 17 32.6	3.637
19	14 44 26.85	2.3955	21 23 27.2	11.119	19	16 43 35.07	2.5393	27 21 5.6	3.462
20	14 46 50.71	2.3998	21 34 30.3	10.983	20	16 46 7.45	2.5400	27 24 28.1	3.287
21	14 49 14.83	2.4042	21 45 25.2	10.846	21	16 48 39.87	2.5406	27 27 40.1	3.112
22	14 51 39.21	2.4084	21 56 11.8	10.707	22	16 51 12.32	2.5410	27 30 41.6	2.937
23	14 54 3.84	2.4127	22 6 50.1	10.567	23	16 53 44.79	2.5412	27 33 32.6	2.762
24	14 56 28.73	2.4169	S. 22 17 19.9	10.426	24	16 56 17.27	2.5413	S. 27 36 13.0	2.586

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour	Minute	Second	Right Ascension	Declination	Hour	Minute	Second	Right Ascension	Declination	Hour	Minute	Second	Right Ascension	Declination	Hour	Minute	Second	Right Ascension	Declination
MONDAY 17.										WEDNESDAY 19.									
0	16	56	17.27	2.5413	S. 27	36	13.0	2.586	0	18	56	1.77	2.4007	S. 26	23	30.1	5.350		
1	16	58	44.75	2.5414	27	37	42.9	2.411	1	18	58	25.77	2.3973	26	18	2.9	5.347		
2	17	1	22.24	2.5416	27	41	2.3	2.296	2	19	0	49.44	2.3918	26	12	26.9	5.672		
3	17	3	54.72	2.5412	27	43	11.2	2.060	3	19	3	12.79	2.3863	26	6	42.3	5.815		
4	17	6	27.18	2.5408	27	45	9.5	1.884	4	19	5	35.80	2.3806	26	0	49.1	5.957		
5	17	8	59.62	2.5405	27	46	57.3	1.768	5	19	7	58.46	2.3748	25	54	47.4	6.099		
6	17	11	52.02	2.5397	27	48	34.5	1.532	6	19	10	20.78	2.3692	25	48	37.2	6.240		
7	17	14	4.38	2.5389	27	50	1.2	1.357	7	19	12	42.76	2.3633	25	42	18.6	6.379		
8	17	16	36.69	2.5381	27	51	17.4	1.182	8	19	15	4.38	2.3574	25	35	51.7	6.517		
9	17	19	8.95	2.5371	27	52	23.1	1.007	9	19	17	25.65	2.3515	25	29	16.6	6.653		
10	17	21	41.14	2.5359	27	53	18.3	0.833	10	19	19	46.56	2.3455	25	22	33.3	6.789		
11	17	24	13.26	2.5346	27	54	3.1	0.659	11	19	22	7.11	2.3396	25	15	41.9	6.923		
12	17	26	45.29	2.5331	27	54	37.4	0.485	12	19	24	27.31	2.3336	25	8	42.6	7.055		
13	17	29	17.23	2.5316	27	55	1.3	0.311	13	19	26	47.14	2.3274	25	1	35.3	7.187		
14	17	31	49.08	2.5300	27	55	14.7	-0.137	14	19	29	6.60	2.3213	25	54	20.1	7.317		
15	17	34	20.83	2.5282	27	55	17.7	+0.017	15	19	31	25.69	2.3151	24	46	57.2	7.446		
16	17	36	52.46	2.5262	27	55	10.3	0.209	16	19	33	44.41	2.3088	24	39	26.6	7.574		
17	17	39	23.97	2.5242	27	54	52.6	0.382	17	19	36	2.75	2.3026	24	31	48.3	7.702		
18	17	41	55.36	2.5220	27	54	24.5	0.554	18	19	38	20.72	2.2963	24	24	2.4	7.827		
19	17	44	26.61	2.5197	27	53	46.1	0.725	19	19	40	38.31	2.2900	24	16	9.1	7.950		
20	17	46	57.72	2.5172	27	52	57.5	0.896	20	19	42	55.52	2.2837	24	8	8.4	8.072		
21	17	49	28.67	2.5145	27	51	58.6	1.067	21	19	45	12.35	2.2773	24	0	0.4	8.193		
22	17	51	59.46	2.5118	27	50	49.5	1.237	22	19	47	28.80	2.2709	23	51	45.2	8.313		
23	17	54	30.09	2.5090	S. 27	49	30.2	1.406	23	19	49	44.86	2.2645	S. 23	43	22.8	8.432		
TUESDAY 18.										THURSDAY 20.									
0	17	57	0.54	2.5060	S. 27	48	0.8	1.575	0	19	52	0.54	2.2581	S. 23	34	53.3	8.550		
1	17	59	30.81	2.5029	27	46	21.2	1.743	1	19	54	15.83	2.2517	23	26	16.8	8.666		
2	18	2	0.89	2.4998	27	44	31.6	1.910	2	19	56	30.74	2.2452	23	17	33.4	8.780		
3	18	4	30.78	2.4965	27	42	32.0	2.077	3	19	58	45.26	2.2388	23	8	43.2	8.893		
4	18	7	0.47	2.4930	27	40	22.4	2.243	4	20	0	59.40	2.2324	22	59	46.2	9.006		
5	18	9	29.94	2.4894	27	38	2.9	2.408	5	20	3	13.15	2.2259	22	50	42.5	9.116		
6	18	11	59.20	2.4858	27	35	33.4	2.573	6	20	5	26.51	2.2194	22	41	32.3	9.224		
7	18	14	28.24	2.4821	27	32	54.1	2.737	7	20	7	39.48	2.2130	22	32	15.6	9.332		
8	18	16	57.05	2.4782	27	30	5.0	2.900	8	20	9	52.07	2.2066	22	22	52.4	9.440		
9	18	19	25.62	2.4742	27	27	6.1	3.062	9	20	12	4.27	2.2001	22	13	22.8	9.545		
10	18	21	53.95	2.4701	27	23	57.5	3.223	10	20	14	16.08	2.1937	22	3	47.0	9.649		
11	18	24	22.03	2.4658	27	20	39.3	3.383	11	20	16	27.51	2.1872	21	54	5.0	9.752		
12	18	26	49.85	2.4615	27	17	11.5	3.543	12	20	18	38.55	2.1807	21	44	16.8	9.853		
13	18	29	17.41	2.4571	27	13	34.2	3.702	13	20	20	49.20	2.1743	21	34	22.6	9.952		
14	18	31	44.70	2.4527	27	9	47.3	3.860	14	20	22	59.47	2.1680	21	24	22.5	10.051		
15	18	34	11.73	2.4482	27	5	51.0	4.016	15	20	25	9.36	2.1616	21	14	16.5	10.148		
16	18	36	38.48	2.4434	27	1	45.4	4.172	16	20	27	18.86	2.1552	21	4	4.7	10.244		
17	18	39	4.94	2.4386	26	57	30.4	4.327	17	20	29	27.98	2.1488	20	53	47.2	10.338		
18	18	41	31.11	2.4337	26	53	6.2	4.480	18	20	31	36.72	2.1425	20	43	24.1	10.432		
19	18	43	56.09	2.4288	26	48	32.8	4.632	19	20	33	45.08	2.1362	20	32	55.4	10.524		
20	18	46	22.57	2.4237	26	43	50.3	4.784	20	20	35	53.06	2.1298	20	22	21.2	10.614		
21	18	48	47.84	2.4186	26	38	58.7	4.935	21	20	38	0.66	2.1236	20	11	41.7	10.703		
22	18	51	12.80	2.4134	26	33	58.1	5.085	22	20	40	7.89	2.1174	20	0	56.9	10.791		
23	18	53	37.44	2.4081	26	28	48.5	5.233	23	20	42	14.75	2.1112	19	50	6.8	10.878		
24	18	56	1.77	2.4027	S. 26	23	30.1	5.380	24	20	44	21.23	2.1049	S. 19	39	11.5	10.963		

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 21.					SUNDAY 23.				
0	20 44 21.23	2.1049	S. 19 39 11.5	10.963	0	22 19 5.82	1.8634	S. 9 38 9.5	13.656
1	20 46 27.34	2.0988	19 28 11.2	11.047	1	22 20 57.51	1.8598	9 24 30.5	13.664
2	20 48 33.08	2.0927	19 17 5.9	11.130	2	22 22 48.99	1.8563	9 10 49.8	13.692
3	20 50 38.46	2.0867	19 5 55.6	11.212	3	22 24 40.27	1.8529	8 57 7.4	13.720
4	20 52 43.48	2.0806	18 54 40.5	11.291	4	22 26 31.34	1.8495	8 43 23.4	13.746
5	20 54 48.13	2.0745	18 43 20.7	11.370	5	22 28 22.21	1.8462	8 29 37.9	13.770
6	20 56 52.42	2.0685	18 31 56.1	11.448	6	22 30 12.88	1.8429	8 15 51.0	13.794
7	20 58 56.35	2.0626	18 20 26.9	11.524	7	22 32 3.35	1.8397	8 2 2.6	13.817
8	21 0 59.93	2.0567	18 8 53.2	11.599	8	22 33 53.64	1.8366	7 48 12.9	13.839
9	21 3 3.16	2.0509	17 57 15.0	11.673	9	22 35 43.74	1.8335	7 34 21.9	13.860
10	21 5 6.04	2.0451	17 45 32.4	11.746	10	22 37 33.66	1.8305	7 20 29.7	13.881
11	21 7 8.57	2.0393	17 33 45.5	11.817	11	22 39 23.40	1.8276	7 6 36.2	13.901
12	21 9 10.75	2.0335	17 21 54.4	11.886	12	22 41 12.97	1.8247	6 52 41.6	13.919
13	21 11 12.59	2.0278	17 9 59.2	11.955	13	22 43 2.37	1.8219	6 38 46.0	13.936
14	21 13 14.09	2.0222	16 57 59.8	12.023	14	22 44 51.60	1.8192	6 24 49.3	13.952
15	21 15 15.25	2.0166	16 45 56.4	12.090	15	22 46 40.67	1.8166	6 10 51.7	13.967
16	21 17 16.08	2.0111	16 33 49.0	12.155	16	22 48 29.59	1.8140	5 56 53.2	13.982
17	21 19 16.58	2.0056	16 21 37.8	12.218	17	22 50 18.35	1.8114	5 42 53.8	13.997
18	21 21 16.75	2.0002	16 9 22.8	12.281	18	22 52 6.96	1.8089	5 28 53.5	14.011
19	21 23 16.60	1.9947	15 57 4.1	12.342	19	22 53 55.42	1.8066	5 14 52.5	14.022
20	21 25 16.12	1.9894	15 44 41.7	12.403	20	22 55 43.75	1.8043	5 0 50.9	14.033
21	21 27 15.32	1.9841	15 32 15.7	12.462	21	22 57 31.94	1.8021	4 46 48.6	14.043
22	21 29 14.21	1.9789	15 19 46.2	12.520	22	22 59 20.00	1.7999	4 32 45.7	14.052
23	21 31 12.79	1.9737	S. 15 7 13.3	12.577	23	23 1 7.93	1.7977	S. 4 18 42.3	14.062
SATURDAY 22.					MONDAY 24.				
0	21 33 11.06	1.9686	S. 14 54 37.0	12.632	0	23 2 55.73	1.7957	S. 4 4 38.4	14.069
1	21 35 9.02	1.9635	14 41 57.4	12.687	1	23 4 43.41	1.7937	3 50 34.0	14.076
2	21 37 6.68	1.9585	14 29 14.6	12.740	2	23 6 30.98	1.7918	3 26 29.3	14.082
3	21 39 4.04	1.9536	14 16 28.6	12.792	3	23 8 18.43	1.7899	3 22 24.2	14.087
4	21 41 1.11	1.9487	14 3 39.5	12.843	4	23 10 5.77	1.7882	3 8 18.8	14.092
5	21 42 57.88	1.9438	13 50 47.4	12.893	5	23 11 53.01	1.7865	2 54 13.2	14.095
6	21 44 54.36	1.9390	13 37 52.3	12.942	6	23 13 40.15	1.7849	2 40 7.4	14.098
7	21 46 50.56	1.9343	13 24 54.3	12.990	7	23 15 27.20	1.7833	2 26 1.4	14.100
8	21 48 46.48	1.9296	13 11 53.5	13.036	8	23 17 14.15	1.7818	2 11 55.4	14.101
9	21 50 42.11	1.9249	12 58 50.0	13.081	9	23 19 1.01	1.7803	1 57 49.3	14.102
10	21 52 37.47	1.9204	12 45 43.8	13.126	10	23 20 47.79	1.7790	1 43 43.2	14.101
11	21 54 32.56	1.9160	12 32 34.9	13.169	11	23 22 34.49	1.7777	1 29 37.2	14.100
12	21 56 27.39	1.9116	12 19 23.5	13.211	12	23 24 21.11	1.7764	1 15 31.2	14.098
13	21 58 21.96	1.9072	12 6 9.6	13.252	13	23 26 7.66	1.7753	1 1 25.4	14.095
14	22 0 16.26	1.9028	11 52 53.2	13.292	14	23 27 54.15	1.7742	0 47 19.8	14.091
15	22 2 10.30	1.8986	11 39 34.5	13.331	15	23 29 40.57	1.7732	0 33 14.5	14.087
16	22 4 4.09	1.8945	11 26 13.5	13.369	16	23 31 26.93	1.7722	0 19 9.4	14.082
17	22 5 57.64	1.8904	11 12 50.2	13.407	17	23 33 13.24	1.7713	S. 0 5 4.7	14.075
18	22 7 50.94	1.8863	10 59 24.7	13.443	18	23 34 59.49	1.7704	N. 0 8 59.6	14.068
19	22 9 44.00	1.8823	10 45 57.1	13.478	19	23 36 45.69	1.7697	0 23 3.5	14.061
20	22 11 36.82	1.8784	10 32 27.4	13.511	20	23 38 31.85	1.7691	0 37 7.0	14.053
21	22 13 29.41	1.8746	10 18 55.8	13.543	21	23 40 17.98	1.7685	0 51 9.9	14.043
22	22 15 21.77	1.8708	10 5 22.3	13.575	22	23 42 4.07	1.7679	1 5 12.2	14.033
23	22 17 13.91	1.8671	9 51 46.8	13.607	23	23 43 50.13	1.7674	1 19 13.9	14.023
24	22 19 5.82	1.8634	S. 9 38 9.5	13.636	24	23 45 36.16	1.7669	N. 1 33 15.0	14.012

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 25.					THURSDAY 27.				
0	23 45 36.16	1.7669	N. 1 33 15.0	14.012	0	1 11 11.75	1.8242	N. 12 18 44.2	12.603
1	23 47 22.16	1.7666	1 47 15.4	14.000	1	1 13 1.28	1.8270	12 31 19.0	12.556
2	23 49 8.15	1.7664	2 1 15.0	13.987	2	1 14 50.99	1.8299	12 43 51.0	12.509
3	23 50 54.13	1.7662	2 15 13.8	13.973	3	1 16 40.87	1.8328	12 56 20.1	12.461
4	23 52 40.10	1.7661	2 29 11.7	13.958	4	1 18 30.92	1.8357	13 8 46.3	12.411
5	23 54 26.06	1.7659	2 43 8.8	13.944	5	1 20 21.15	1.8386	13 21 9.4	12.360
6	23 56 12.01	1.7658	2 57 5.0	13.928	6	1 22 11.55	1.8416	13 33 29.5	12.309
7	23 57 57.96	1.7659	3 11 0.2	13.911	7	1 24 2.14	1.8448	13 45 46.5	12.258
8	23 59 43.92	1.7661	3 24 54.3	13.893	8	1 25 52.92	1.8480	13 58 0.4	12.206
9	0 1 29.89	1.7663	3 38 47.4	13.876	9	1 27 43.90	1.8512	14 10 11.2	12.152
10	0 3 15.87	1.7665	3 52 39.4	13.857	10	1 29 35.07	1.8545	14 22 18.7	12.097
11	0 5 1.87	1.7668	4 6 30.2	13.837	11	1 31 26.44	1.8578	14 34 22.9	12.043
12	0 6 47.89	1.7672	4 20 19.9	13.817	12	1 33 18.00	1.8611	14 46 23.9	11.988
13	0 8 33.94	1.7676	4 34 8.3	13.796	13	1 35 9.77	1.8646	14 58 21.5	11.932
14	0 10 20.01	1.7681	4 47 55.4	13.774	14	1 37 1.75	1.8682	15 10 15.7	11.874
15	0 12 6.11	1.7687	5 1 41.2	13.751	15	1 38 53.95	1.8717	15 22 6.4	11.816
16	0 13 52.25	1.7694	5 15 25.6	13.728	16	1 40 46.36	1.8753	15 33 53.6	11.757
17	0 15 38.44	1.7702	5 29 8.6	13.705	17	1 42 38.99	1.8789	15 45 37.3	11.698
18	0 17 24.67	1.7709	5 42 50.2	13.681	18	1 44 31.83	1.8826	15 57 17.4	11.638
19	0 19 10.95	1.7718	5 56 30.3	13.655	19	1 46 24.90	1.8864	16 8 53.9	11.577
20	0 20 57.28	1.7727	6 10 8.8	13.628	20	1 48 18.20	1.8903	16 20 26.7	11.515
21	0 22 43.67	1.7737	6 23 45.7	13.602	21	1 50 11.74	1.8942	16 31 55.7	11.452
22	0 24 30.12	1.7747	6 37 21.0	13.574	22	1 52 5.51	1.8982	16 43 20.9	11.388
23	0 26 16.64	1.7758	N. 6 50 54.6	13.546	23	1 53 59.52	1.9021	N. 16 54 42.3	11.324
WEDNESDAY 26.					FRIDAY 28.				
0	0 28 3.22	1.7769	N. 7 4 26.5	13.517	0	1 55 53.76	1.9061	N. 17 5 59.8	11.258
1	0 29 49.87	1.7782	7 17 56.7	13.487	1	1 57 48.25	1.9102	17 17 13.3	11.192
2	0 31 36.60	1.7796	7 31 25.0	13.457	2	1 59 42.99	1.9144	17 28 22.9	11.126
3	0 33 23.42	1.7810	7 44 51.5	13.426	3	2 1 37.98	1.9186	17 39 28.5	11.059
4	0 35 10.32	1.7824	7 58 16.1	13.394	4	2 3 33.22	1.9228	17 50 30.0	10.990
5	0 36 57.30	1.7838	8 11 38.7	13.361	5	2 5 28.72	1.9271	18 1 27.3	10.921
6	0 38 44.37	1.7853	8 24 59.4	13.328	6	2 7 24.47	1.9313	18 12 20.5	10.852
7	0 40 31.54	1.7870	8 38 18.1	13.294	7	2 9 20.48	1.9357	18 23 9.5	10.780
8	0 42 18.81	1.7887	8 51 34.7	13.259	8	2 11 16.76	1.9402	18 33 54.1	10.708
9	0 44 6.18	1.7904	9 4 49.2	13.224	9	2 13 13.31	1.9447	18 44 34.4	10.635
10	0 45 53.66	1.7922	9 18 1.6	13.187	10	2 15 10.13	1.9492	18 55 10.3	10.561
11	0 47 41.25	1.7942	9 31 11.7	13.150	11	2 17 7.22	1.9537	19 5 41.7	10.487
12	0 49 28.96	1.7962	9 44 19.6	13.113	12	2 19 4.58	1.9583	19 16 8.7	10.412
13	0 51 16.79	1.7982	9 57 25.3	13.075	13	2 21 2.22	1.9630	19 26 31.2	10.336
14	0 53 4.74	1.8002	10 10 28.6	13.035	14	2 23 0.14	1.9677	19 36 49.0	10.259
15	0 54 52.81	1.8023	10 23 29.5	12.995	15	2 24 58.35	1.9725	19 47 2.2	10.181
16	0 56 41.01	1.8045	10 36 28.0	12.955	16	2 26 56.84	1.9772	19 57 10.7	10.102
17	0 58 29.35	1.8067	10 49 24.1	12.914	17	2 28 55.62	1.9820	20 7 14.4	10.022
18	1 0 17.82	1.8090	11 2 17.7	12.872	18	2 30 54.68	1.9868	20 17 13.4	9.943
19	1 2 6.43	1.8114	11 15 8.8	12.829	19	2 32 54.04	1.9917	20 27 7.5	9.861
20	1 3 55.19	1.8139	11 27 57.2	12.785	20	2 34 53.69	1.9967	20 36 56.7	9.776
21	1 5 44.10	1.8164	11 40 43.0	12.742	21	2 36 53.64	2.0017	20 46 40.9	9.694
22	1 7 33.16	1.8190	11 53 26.2	12.697	22	2 38 53.89	2.0067	20 56 20.0	9.610
23	1 9 22.38	1.8216	12 6 6.6	12.650	23	2 40 54.44	2.0117	21 5 54.1	9.526
24	1 11 11.75	1.8242	N. 12 18 44.2	12.603	24	2 42 55.29	2.0167	N. 21 15 23.1	9.440

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 29.					MONDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	2 42 55.29	2.0167	N.21 15 23.1	9.440	0	4 25 50.77	2.2707	N.26 51 28.3	4.195
1	2 44 56.44	2.0218	21 24 46.9	9.352	1	4 28 7.16	2.2756	26 55 36.0	4.062
2	2 46 57.90	2.0269	21 34 5.4	9.265	2	4 30 23.84	2.2804	26 59 35.7	3.928
3	2 48 59.67	2.0321	21 43 18.7	9.177	3	4 32 40.81	2.2852	27 3 27.4	3.794
4	2 51 1.75	2.0372	21 52 26.7	9.087	4	4 34 58.06	2.2899	27 7 11.0	3.659
5	2 53 4.14	2.0424	22 1 29.2	8.996	5	4 37 15.60	2.2946	27 10 46.5	3.522
6	2 55 6.84	2.0476	22 10 26.2	8.904	6	4 39 33.42	2.2993	27 14 13.7	3.385
7	2 57 9.85	2.0529	22 19 17.7	8.812	7	4 41 51.51	2.3038	27 17 32.7	3.247
8	2 59 13.18	2.0582	22 28 3.7	8.719	8	4 44 9.87	2.3084	27 20 43.4	3.109
9	3 1 16.83	2.0635	22 36 44.0	8.624	9	4 46 28.51	2.3129	27 23 45.8	2.970
10	3 3 20.80	2.0688	22 45 18.6	8.529	10	4 48 47.42	2.3172	27 26 39.8	2.829
11	3 5 25.09	2.0741	22 53 47.5	8.433	11	4 51 6.58	2.3214	27 29 25.3	2.687
12	3 7 29.69	2.0793	23 2 10.6	8.336	12	4 53 25.99	2.3257	27 32 2.3	2.545
13	3 9 34.61	2.0847	23 10 27.8	8.238	13	4 55 45.66	2.3299	27 34 30.7	2.403
14	3 11 39.86	2.0902	23 18 39.1	8.139	14	4 58 5.58	2.3341	27 36 50.6	2.260
15	3 13 45.44	2.0957	23 26 44.5	8.039	15	5 0 25.75	2.3382	27 39 1.9	2.116
16	3 15 51.34	2.1010	23 34 43.8	7.937	16	5 2 46.16	2.3422	27 41 4.5	1.970
17	3 17 57.56	2.1064	23 42 37.0	7.835	17	5 5 6.80	2.3459	27 42 58.3	1.823
18	3 20 4.11	2.1118	23 50 24.0	7.732	18	5 7 27.67	2.3498	27 44 43.3	1.676
19	3 22 10.98	2.1172	23 58 4.8	7.628	19	5 9 48.77	2.3536	27 46 19.5	1.529
20	3 24 18.18	2.1227	24 5 39.4	7.524	20	5 12 10.10	2.3573	27 47 46.8	1.382
21	3 26 25.71	2.1282	24 13 7.7	7.418	21	5 14 31.65	2.3609	27 49 5.3	1.233
22	3 28 33.56	2.1336	24 20 29.6	7.311	22	5 16 53.41	2.3644	27 50 14.8	1.085
23	3 30 41.74	2.1390	N.24 27 45.0	7.203	23	5 19 15.38	2.3678	N.27 51 15.3	0.933
SUNDAY 30.					TUESDAY, SEPTEMBER 1.				
0	3 32 50.24	2.1444	N.24 34 54.0	7.095	0	5 21 37.55	2.3712	N.27 52 6.8	0.782
1	3 34 59.07	2.1499	24 41 56.4	6.985	PHASES OF THE MOON.				
2	3 37 8.23	2.1554	24 48 52.2	6.874					
3	3 39 17.72	2.1608	24 55 41.3	6.762					
4	3 41 27.53	2.1662	25 2 23.7	6.650					
5	3 43 37.67	2.1717	25 8 59.3	6.536	☾ Last Quarter . . . Aug. 1 6 34.3				
6	3 45 48.13	2.1771	25 15 28.0	6.421					
7	3 47 58.92	2.1825	25 21 49.8	6.305					
8	3 50 10.03	2.1878	25 28 4.6	6.189					
9	3 52 21.46	2.1932	25 34 12.5	6.072	☉ New Moon 8 17 1.8				
10	3 54 33.22	2.1986	25 40 13.3	5.955					
11	3 56 45.30	2.2039	25 46 6.9	5.838					
12	3 58 57.69	2.2092	25 51 53.3	5.721					
13	4 1 10.40	2.2145	25 57 32.4	5.592	☾ First Quarter 15 9 2.5				
14	4 3 23.43	2.2198	26 3 4.3	5.470					
15	4 5 36.78	2.2251	26 8 28.8	5.347					
16	4 7 50.44	2.2303	26 13 45.9	5.222					
17	4 10 4.41	2.2354	26 18 55.5	5.097	☉ Full Moon 22 19 4.4				
18	4 12 18.69	2.2406	26 23 57.5	4.970					
19	4 14 33.28	2.2457	26 28 51.9	4.843					
20	4 16 48.17	2.2507	26 33 38.7	4.716					
21	4 19 3.37	2.2558	26 38 17.8	4.587	☾ Last Quarter 30 22 55.2				
22	4 21 18.87	2.2608	26 42 49.1	4.457					
23	4 23 34.67	2.2658	26 47 12.6	4.327					
24	4 25 50.77	2.2707	N.26 51 28.3	4.195					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	α Aquilæ W.	93 1 47	3728	94 18 4	3726	95 34 24	3723	96 50 47	3721
	Fomalhaut W.	68 7 57	3412	69 30 0	3400	70 52 17	3386	72 14 49	3373
	α Pegasi W.	45 43 28	3422	47 5 20	3398	48 27 39	3375	49 50 24	3353
	SUN E.	93 0 17	3402	91 38 3	3396	90 15 42	3390	88 53 14	3382
2	α Aquilæ W.	103 13 9	3716	104 29 39	3716	105 46 9	3718	107 2 37	3720
	Fomalhaut W.	79 11 5	3312	80 35 3	3300	81 59 15	3287	83 23 42	3275
	α Pegasi W.	56 50 7	3255	58 15 11	3237	59 40 36	3220	61 6 22	3201
	SUN E.	81 58 35	3338	80 35 8	3328	79 11 29	3317	77 47 37	3306
3	Fomalhaut W.	90 29 31	3214	91 55 24	3202	93 21 31	3190	94 47 52	3178
	α Pegasi W.	68 20 28	3114	69 48 20	3098	71 16 32	3081	72 45 5	3065
	α Arietis W.	24 54 59	2982	26 25 34	2960	27 56 37	2939	29 28 6	2919
	SUN E.	70 44 55	3244	69 19 38	3231	67 54 5	3216	66 28 15	3202
4	Fomalhaut W.	102 3 8	3122	103 30 51	3111	104 58 47	3101	106 26 56	3091
	α Pegasi W.	80 12 59	2981	81 43 36	2964	83 14 34	2947	84 45 53	2931
	α Arietis W.	37 11 40	2827	38 45 33	2808	40 19 50	2791	41 54 30	2773
	SUN E.	59 14 39	3124	57 46 59	3109	56 19 0	3092	54 50 41	3075
5	α Pegasi W.	92 27 39	2850	94 1 2	2835	95 34 45	2819	97 8 48	2805
	α Arietis W.	49 53 40	2685	51 30 40	2667	53 8 4	2649	54 45 52	2632
	MARS W.	33 20 21	2974	34 51 6	2949	36 22 23	2925	37 54 10	2902
	SUN E.	47 23 52	2989	45 53 26	2971	44 22 37	2954	42 51 27	2936
6	α Pegasi W.	105 3 48	2734	106 39 43	2722	108 15 54	2710	109 52 21	2698
	α Arietis W.	63 0 44	2546	64 40 53	2529	66 21 26	2512	68 2 22	2496
	MARS W.	45 40 12	2795	47 14 47	2775	48 49 48	2754	50 25 16	2735
	Aldebaran W.	32 25 1	2785	33 59 48	2748	35 35 24	2713	37 11 47	2681
	SUN E.	35 9 57	2848	33 36 31	2830	32 2 42	2813	30 28 31	2795
7	α Arietis W.	76 32 44	2417	78 15 55	2401	79 59 28	2387	81 43 22	2372
	MARS W.	58 28 49	2644	60 6 44	2627	61 45 2	2610	63 23 43	2593
	Aldebaran W.	45 23 47	2545	47 3 58	2522	48 44 40	2500	50 25 52	2480
	SUN E.	22 32 2	2713	20 55 39	2697	19 18 55	2682	17 41 51	2667
10	SUN W.	17 25 30	2450	19 7 54	2445	20 50 25	2441	22 33 2	2436
	Spica E.	46 42 19	2160	44 52 51	2157	43 3 18	2154	41 13 41	2151
	SATURN E.	67 20 16	2206	65 32 0	2206	63 43 41	2204	61 55 19	2202
	Antares E.	92 32 49	2153	90 43 10	2149	88 53 25	2145	87 3 35	2142
11	SUN W.	31 7 3	2429	32 49 56	2429	34 32 49	2430	36 15 41	2431
	SATURN E.	52 53 20	2207	51 5 3	2210	49 16 51	2214	47 28 45	2220
	Antares E.	77 53 33	2136	76 3 28	2136	74 13 24	2137	72 23 21	2138
12	SUN W.	44 49 18	2445	46 31 48	2450	48 14 12	2454	49 56 30	2460
	Antares E.	63 13 50	2151	61 24 9	2156	59 34 35	2160	57 45 7	2165
	α Aquilæ E.	113 44 22	2988	112 13 54	2969	110 43 3	2954	109 11 53	2942
13	SUN W.	58 25 56	2491	60 7 22	2499	61 48 37	2506	63 29 42	2515
	Antares E.	48 39 48	2194	46 51 12	2201	45 2 46	2208	43 14 31	2216
	α Aquilæ E.	101 32 57	2909	100 0 50	2909	98 28 42	2909	96 56 34	2911

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Aquilæ W. Fomalhaut W. α Pegasi W. SUN E.	98 7 12 73 37 36 51 13 34 87 30 37	3719 3361 3332 3374	99 23 39 75 0 37 52 37 8 86 7 51	3717 3349 3313 3366	100 40 8 76 23 52 54 1 5 84 44 56	3716 3337 3293 3358	101 56 38 77 47 21 55 25 25 83 21 51	3715 3334 3274 3348
2	α Aquilæ W. Fomalhaut W. α Pegasi W. SUN E.	108 19 3 84 48 23 62 32 30 76 23 33	3723 3263 3184 3294	109 35 26 86 13 18 63 58 58 74 59 15	3727 3250 3167 3282	110 51 44 87 38 28 65 25 47 73 34 43	3732 3238 3149 3270	112 7 57 89 3 52 66 52 57 72 9 56	3739 3225 3132 3258
3	Fomalhaut W. α Pegasi W. α Arietis W. SUN E.	96 14 28 74 13 58 31 0 1 65 2 8	3166 3047 2900 3188	97 41 18 75 43 12 32 32 20 63 35 44	3155 3030 2881 3172	99 8 21 77 12 47 34 5 3 62 9 1	3143 3014 2862 3137	100 35 38 78 42 43 35 38 10 60 42 0	3133 2997 2845 3140
4	Fomalhaut W. α Pegasi W. α Arietis W. SUN E.	107 55 16 86 17 33 43 29 33 53 22 1	3082 2914 2755 3059	109 23 47 87 49 34 45 5 0 51 53 1	3073 2898 2738 3041	110 52 29 89 21 55 46 40 50 50 23 39	3065 2882 2720 3024	112 21 21 90 54 37 48 17 3 48 53 56	3058 2866 2702 3007
5	α Pegasi W. α Arietis W. MARS W. SUN E.	98 43 10 56 24 3 39 26 26 41 19 54	2789 2615 2880 2919	100 17 52 58 2 38 40 59 11 39 47 59	2775 2598 2858 2901	101 52 52 59 41 36 42 32 24 38 15 41	2761 2580 2857 2883	103 28 11 61 20 58 44 6 4 36 43 0	2747 2595 2815 2866
6	α Pegasi W. α Arietis W. MARS W. Aldebaran W. SUN E.	111 29 4 69 43 41 52 1 9 38 48 53 28 53 57	2687 2480 2716 2649 2779	113 6 1 71 25 23 53 37 27 40 26 41 27 19 1	2678 2463 2698 2621 2762	114 43 11 73 7 28 55 14 10 42 5 7 25 43 43	2668 2448 2680 2594 2745	116 20 34 74 49 55 56 51 17 43 44 10 24 8 3	2660 2432 2661 2569 2729
7	α Arietis W. MARS W. Aldebaran W. SUN E.	83 27 37 65 2 47 52 7 35 16 4 27	2357 2578 2460 2653	85 12 13 66 42 12 53 49 45 14 26 44	2344 2563 2441 2640	86 57 8 68 21 58 55 32 21 12 48 43	2331 2548 2423 2627	88 42 23 70 2 5 57 15 23 11 10 25	2318 2533 2406 2615
10	SUN W. Spica E. SATURN E. Antares E.	24 15 45 39 24 0 60 6 55 85 13 40	2434 2150 2202 2139	25 58 31 37 34 17 58 18 30 83 23 41	2432 2149 2202 2138	27 41 20 35 44 32 56 30 5 81 33 40	2431 2149 2202 2137	29 24 11 33 54 47 54 41 41 79 43 37	2430 2149 2204 2136
11	SUN W. SATURN E. Antares E.	37 58 31 45 40 47 70 33 20	2433 2226 2140	39 41 18 43 52 58 68 43 22	2436 2234 2142	41 24 2 42 5 21 66 53 27	2438 2242 2145	43 6 42 40 17 56 65 3 36	2441 2252 2148
12	SUN W. Antares E. α Aquilæ E.	51 38 40 55 55 46 107 40 27	2465 2170 2931	53 20 42 54 6 33 106 8 48	2471 2176 2923	55 2 36 52 17 29 104 36 58	2477 2182 2916	56 44 21 50 28 34 103 5 0	2485 2188 2912
13	SUN W. Antares E. α Aquilæ E.	65 10 35 41 26 27 95 24 29	2522 2224 2914	66 51 17 39 38 35 93 52 28	2530 2231 2920	68 31 48 37 50 54 92 20 34	2540 2240 2926	70 12 6 36 3 26 90 48 48	2548 2248 2934

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
14	SUN W.	71 52 12	2558	73 32 5	2567	75 11 45	2577	76 51 12	2586
	α Aquilæ E.	89 17 12	2942	87 45 47	2954	86 14 36	2965	84 43 39	2977
	Fomalhaut E.	114 20 3	2643	112 42 7	2642	111 4 9	2642	109 26 11	2643
15	SUN W.	85 5 5	2637	86 43 10	2647	88 21 1	2657	89 58 38	2668
	Spica W.	25 54 14	2350	27 39 1	2357	29 23 38	2364	31 8 4	2373
	α Aquilæ E.	77 13 30	3063	75 44 35	3084	74 16 6	3106	72 48 4	3131
	Fomalhaut E.	101 17 10	2662	99 39 39	2669	98 2 17	2675	96 25 4	2683
16	SUN W.	98 3 11	2721	99 39 23	2732	101 15 21	2742	102 51 5	2753
	Spica W.	39 47 8	2417	41 30 18	2426	43 13 15	2436	44 55 59	2445
	α Aquilæ E.	65 35 55	3279	64 11 19	3314	62 47 24	3353	61 24 14	3393
	Fomalhaut E.	88 21 47	2729	86 45 46	2741	85 10 0	2752	83 34 29	2764
	α Pegasi E.	110 29 54	2626	108 51 34	2632	107 13 22	2638	105 35 18	2643
17	SUN W.	110 46 15	2805	112 20 36	2816	113 54 43	2827	115 28 36	2837
	Spica W.	53 26 16	2492	55 7 40	2502	56 48 50	2512	58 29 47	2521
	SATURN W.	33 19 45	2620	34 58 13	2621	36 36 39	2623	38 15 3	2625
	Fomalhaut E.	75 41 6	2833	74 7 21	2848	72 33 56	2865	71 0 52	2881
	α Pegasi E.	97 27 16	2681	95 50 11	2689	94 13 17	2698	92 36 35	2708
18	SUN W.	123 14 44	2887	124 47 19	2898	126 19 40	2909	127 51 48	2918
	Spica W.	66 51 17	2568	68 30 56	2577	70 10 23	2586	71 49 37	2595
	SATURN W.	46 25 53	2648	48 3 43	2655	49 41 24	2660	51 18 57	2667
	Fomalhaut E.	63 21 15	2979	61 50 36	3001	60 20 25	3025	58 50 43	3050
	α Pegasi E.	84 36 16	2757	83 0 52	2769	81 25 43	2779	79 50 48	2790
19	Spica W.	80 2 41	2640	81 40 41	2649	83 18 29	2658	84 56 5	2668
	SATURN W.	59 24 24	2703	61 1 0	2710	62 37 26	2718	64 13 42	2726
	Antares W.	34 8 59	2638	35 47 3	2646	37 24 56	2655	39 2 36	2663
	Fomalhaut E.	51 30 32	3000	50 4 23	3037	48 38 58	3076	47 14 19	3115
	α Pegasi E.	72 0 1	2852	70 26 40	2866	68 53 37	2879	67 20 51	2893
	α Arietis E.	113 55 8	2655	112 17 28	2664	110 40 0	2673	109 2 44	2681
20	Spica W.	93 1 5	2711	94 37 30	2720	96 13 43	2729	97 49 45	2738
	SATURN W.	72 12 24	2766	73 47 37	2774	75 22 39	2782	76 57 30	2791
	Antares W.	47 8 0	2708	48 44 29	2716	50 20 47	2725	51 56 54	2734
	α Pegasi E.	59 41 48	2973	58 11 2	2991	56 40 38	3011	55 10 39	3030
	α Arietis E.	100 59 14	2724	99 23 6	2733	97 47 10	2741	96 11 25	2750
21	Spica W.	105 47 2	2781	107 21 55	2789	108 56 37	2798	110 31 8	2806
	SATURN W.	84 49 3	2832	86 22 49	2841	87 56 24	2849	89 29 48	2858
	Antares W.	59 54 35	2776	61 29 34	2785	63 4 21	2793	64 38 58	2802
	α Arietis E.	88 15 29	2792	86 40 51	2801	85 6 25	2809	83 32 9	2818
	MARS E.	114 53 40	3017	113 23 48	3024	111 54 5	3033	110 24 33	3041
	Aldebaran E.	119 45 59	2875	118 13 8	2880	116 40 24	2886	115 7 47	2892
22	SATURN W.	97 14 3	2901	98 46 21	2909	100 18 28	2918	101 50 24	2926
	Antares W.	72 29 16	2844	74 2 47	2852	75 36 8	2860	77 9 18	2868
	α Arietis E.	75 43 38	2861	74 10 29	2869	72 37 31	2877	71 4 43	2886
	MARS E.	102 59 19	3081	101 30 46	3089	100 2 23	3097	98 34 10	3105
	Aldebaran E.	107 26 44	2925	105 54 57	2932	104 23 19	2939	102 51 49	2946

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
14	SUN	W.	78 30 26	2396	80 9 26	2606	81 48 13	2616	83 26 46	2626
	α Aquilæ	E.	83 12 58	2992	81 42 35	3008	80 12 32	3023	78 42 50	3043
	Fomalhaut	E.	107 48 15	2645	106 10 21	2649	104 32 32	2652	102 54 48	2657
15	SUN	W.	91 36 1	2678	93 13 10	2689	94 50 4	2699	96 26 45	2710
	Spica	W.	32 52 18	2381	34 36 20	2390	36 20 9	2399	38 3 45	2408
	α Aquilæ	E.	71 20 32	3157	69 53 31	3184	68 27 3	3214	67 1 10	3246
	Fomalhaut	E.	94 48 1	2691	93 11 9	2700	91 34 29	2709	89 58 1	2719
16	SUN	W.	104 26 35	2763	106 1 51	2774	107 36 53	2785	109 11 41	2795
	Spica	W.	46 38 29	2455	48 20 46	2465	50 2 49	2474	51 44 39	2483
	α Aquilæ	E.	60 1 50	3437	58 40 15	3484	57 19 33	3534	55 59 46	3588
	Fomalhaut	E.	81 59 14	2776	80 24 15	2790	78 49 34	2804	77 15 11	2818
	α Pegasi	E.	103 57 22	2631	102 19 36	2657	100 41 59	2665	99 4 32	2673
17	SUN	W.	117 2 16	2847	118 35 43	2858	120 8 56	2867	121 41 57	2878
	Spica	W.	60 10 31	2530	61 51 2	2540	63 31 20	2549	65 11 25	2559
	SATURN	W.	39 53 24	2629	41 31 40	2632	43 9 51	2638	44 47 55	2648
	Fomalhaut	E.	69 28 9	2899	67 55 49	2918	66 23 53	2937	64 52 21	2958
	α Pegasi	E.	91 0 6	2717	89 23 49	2727	87 47 45	2737	86 11 54	2747
18	SUN	W.	129 23 44	2928	130 55 27	2938	132 26 58	2948	133 58 16	2958
	Spica	W.	73 28 39	2604	75 7 28	2613	76 46 5	2623	78 24 29	2632
	SATURN	W.	52 56 21	2674	54 33 36	2681	56 10 42	2688	57 47 38	2695
	Fomalhaut	E.	57 21 32	3076	55 52 53	3105	54 24 49	3134	52 57 21	3167
	α Pegasi	E.	78 16 7	2802	76 41 42	2814	75 7 32	2826	73 33 38	2839
19	Spica	W.	86 33 28	2676	88 10 40	2685	89 47 40	2694	91 24 28	2702
	SATURN	W.	65 49 47	2734	67 25 42	2741	69 1 27	2750	70 37 1	2758
	Antares	W.	40 40 5	2673	42 17 21	2681	43 54 26	2690	45 31 19	2699
	Fomalhaut	E.	45 50 30	3365	44 27 33	3415	43 5 34	3470	41 44 36	3530
	α Pegasi	E.	65 48 23	2908	64 16 14	2924	62 44 25	2939	61 12 56	2956
	α Arietis	E.	107 25 39	2690	105 48 46	2698	104 12 4	2707	102 35 33	2716
20	Spica	W.	99 25 35	2746	101 1 14	2755	102 36 41	2763	104 11 57	2772
	SATURN	W.	78 32 10	2799	80 6 39	2807	81 40 58	2815	83 15 6	2824
	Antares	W.	53 32 49	2742	55 8 33	2751	56 44 5	2760	58 19 26	2769
	α Pegasi	E.	53 41 4	3052	52 11 55	3074	50 43 14	3097	49 15 1	3123
	α Arietis	E.	94 35 51	2759	93 0 29	2767	91 25 18	2775	89 50 18	2784
21	Spica	W.	112 5 28	2815	113 39 37	2823	115 13 35	2831	116 47 22	2840
	SATURN	W.	91 3 1	2866	92 36 3	2875	94 8 54	2883	95 41 34	2892
	Antares	W.	66 13 23	2811	67 47 37	2818	69 21 41	2827	70 55 34	2835
	α Arietis	E.	81 58 5	2826	80 24 11	2835	78 50 29	2844	77 16 58	2852
	MARS	E.	108 55 10	3049	107 25 58	3056	105 56 55	3065	104 28 2	3073
	Aldebaran	E.	113 35 18	2898	112 2 57	2905	110 30 44	2912	108 58 40	2918
22	SATURN	W.	103 22 10	2935	104 53 45	2944	106 25 8	2952	107 56 21	2962
	Antares	W.	78 42 18	2876	80 15 8	2884	81 47 47	2892	83 20 16	2900
	α Arietis	E.	69 32 6	2894	67 59 40	2903	66 27 25	2912	64 55 21	2920
	MARS	E.	97 6 6	3114	95 38 13	3121	94 10 29	3129	92 42 55	3137
	Aldebaran	E.	101 20 29	2954	99 49 18	2961	98 18 16	2968	96 47 23	2975

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Antares	W.	84 52 35	2908	86 24 44	2916	87 56 43	2923	89 28 33	2931
	α Arietis	E.	63 23 28	2928	61 51 45	2936	60 20 12	2945	58 48 50	2953
	MARS	E.	91 15 30	3145	89 48 15	3153	88 21 9	3161	86 54 13	3168
	Aldebaran	E.	95 16 39	2983	93 46 5	2990	92 15 40	2997	90 45 24	3005
24	Antares	W.	97 5 21	2966	98 36 16	2973	100 7 2	2981	101 37 39	2987
	α Aquilæ	W.	50 45 17	4244	51 53 2	4197	53 1 31	4156	54 10 39	4117
	α Arietis	E.	51 14 34	2993	49 44 13	3002	48 14 3	3010	46 44 3	3018
	MARS	E.	79 41 50	3206	78 15 48	3214	76 49 55	3220	75 24 10	3228
	Aldebaran	E.	83 16 25	3043	81 47 5	3050	80 17 54	3057	78 48 52	3065
25	α Aquilæ	W.	60 4 28	3973	61 16 34	3952	62 29 1	3932	63 41 48	3914
	α Arietis	E.	39 16 34	3060	37 47 35	3068	36 18 46	3076	34 50 7	3086
	MARS	E.	68 17 29	3261	66 52 32	3267	65 27 42	3273	64 2 59	3279
	Aldebaran	E.	71 26 0	3101	69 57 52	3109	68 29 53	3115	67 2 2	3123
	Pollux	E.	113 53 59	3029	112 24 22	3034	110 54 51	3039	109 25 26	3044
26	α Aquilæ	W.	69 49 49	3845	71 4 5	3835	72 18 31	3825	73 33 7	3816
	Fomalhaut	W.	43 47 46	3770	45 3 19	3737	46 19 27	3707	47 36 7	3680
	MARS	E.	57 1 5	3306	55 37 1	3311	54 13 2	3315	52 49 8	3320
	Aldebaran	E.	59 44 55	3158	58 17 55	3164	56 51 3	3171	55 24 19	3178
	Pollux	E.	101 59 50	3065	100 30 58	3069	99 2 10	3072	97 33 26	3074
27	α Aquilæ	W.	79 48 8	3784	81 3 27	3780	82 18 50	3775	83 34 18	3771
	Fomalhaut	W.	54 5 49	3576	55 24 49	3560	56 44 7	3545	58 3 42	3530
	MARS	E.	45 50 55	3340	44 27 30	3344	43 4 9	3347	41 40 52	3351
	Aldebaran	E.	48 12 50	3215	46 46 59	3223	45 21 17	3231	43 55 45	3240
	Pollux	E.	90 10 33	3085	88 42 5	3087	87 13 39	3087	85 45 14	3087
	SUN	E.	133 24 23	3445	132 2 57	3446	130 41 33	3447	129 20 10	3447
28	α Aquilæ	W.	89 52 26	3760	91 8 10	3758	92 23 56	3758	93 39 42	3757
	Fomalhaut	W.	64 45 19	3469	66 6 18	3457	67 27 30	3447	68 48 53	3437
	α Pegasi	W.	42 22 0	3508	43 42 15	3485	45 2 56	3462	46 24 3	3440
	Pollux	E.	78 23 6	3084	76 54 37	3082	75 26 6	3081	73 57 33	3078
	SUN	E.	122 33 11	3444	121 11 44	3441	119 50 14	3439	118 28 42	3436
29	α Aquilæ	W.	99 58 34	3761	101 14 17	3763	102 29 58	3766	103 45 36	3768
	Fomalhaut	W.	75 38 38	3388	77 1 8	3379	78 23 48	3369	79 46 40	3360
	α Pegasi	W.	53 15 18	3348	54 38 34	3332	56 2 9	3316	57 26 2	3300
	Pollux	E.	66 33 46	3059	65 4 46	3053	63 35 39	3048	62 6 26	3042
	SUN	E.	111 40 0	3415	110 18 0	3408	108 55 53	3402	107 33 39	3396
30	Fomalhaut	W.	86 43 38	3313	88 7 34	3304	89 31 41	3294	90 55 59	3284
	α Pegasi	W.	64 29 52	3226	65 55 30	3212	67 21 25	3198	68 47 37	3183
	Pollux	E.	54 38 19	3006	53 8 14	2998	51 37 59	2989	50 7 33	2980
	SUN	E.	100 40 23	3354	99 17 14	3345	97 53 54	3335	96 30 23	3324
31	Fomalhaut	W.	98 0 19	3237	99 25 44	3227	100 51 21	3218	102 17 9	3209
	α Pegasi	W.	76 2 56	3110	77 30 53	3096	78 59 8	3081	80 27 41	3066
	α Arietis	W.	32 52 38	2961	34 23 40	2945	35 55 2	2928	37 26 45	2912
	Pollux	E.	42 32 21	2930	41 0 40	2918	39 28 44	2907	37 56 34	2895
	SUN	E.	89 29 30	3264	88 4 36	3251	86 39 27	3236	85 14 1	3222

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
23	Antares W.	91 0 13	2938	92 31 44	2946	94 3 5	2953	95 34 17	2959
	α Arietis E.	57 17 38	2961	55 46 36	2969	54 15 45	2977	52 45 4	2986
	MARS E.	85 27 26	3176	84 0 48	3184	82 34 20	3192	81 8 1	3198
	Aldebaran E.	89 15 18	3013	87 45 21	3020	86 15 33	3027	84 45 54	3033
24	Antares W.	103 8 8	2993	104 38 29	3000	106 8 42	3005	107 38 48	3012
	α Aquilæ W.	55 20 24	4083	56 30 42	4082	57 41 30	4024	58 52 46	3998
	α Arietis E.	45 14 13	3026	43 44 33	3034	42 15 3	3043	40 45 43	3052
	MARS E.	73 58 34	3235	72 33 6	3242	71 7 46	3248	69 42 34	3254
	Aldebaran E.	77 20 0	3072	75 51 16	3080	74 22 42	3087	72 54 17	3094
25	α Aquilæ W.	64 54 54	3898	66 8 16	3882	67 21 54	3869	68 35 45	3856
	α Arietis E.	33 21 40	3093	31 53 24	3105	30 25 20	3114	28 57 27	3124
	MARS E.	62 38 23	3285	61 13 54	3290	59 49 31	3296	58 25 15	3301
	Aldebaran E.	65 34 20	3129	64 6 46	3137	62 39 21	3143	61 12 4	3150
	Pollux E.	107 56 8	3049	106 26 56	3053	104 57 49	3057	103 28 47	3061
26	α Aquilæ W.	74 47 53	3808	76 2 47	3802	77 17 47	3795	78 32 54	3789
	Fomalhaut W.	48 53 15	3653	50 10 50	3634	51 28 48	3613	52 47 8	3594
	MARS E.	51 25 20	3325	50 1 37	3328	48 37 58	3332	47 14 24	3337
	Aldebaran E.	53 57 44	3186	52 31 18	3193	51 5 0	3200	49 38 51	3207
	Pollux E.	96 4 45	3078	94 36 8	3080	93 7 34	3082	91 39 2	3084
27	α Aquilæ W.	84 49 50	3768	86 5 25	3766	87 21 3	3764	88 36 43	3761
	Fomalhaut W.	59 23 33	3516	60 43 39	3504	62 3 59	3492	63 24 32	3480
	MARS E.	40 17 39	3353	38 54 29	3357	37 31 23	3360	36 8 21	3365
	Aldebaran E.	42 30 23	3250	41 5 13	3259	39 40 14	3270	38 15 28	3282
	Pollux E.	84 16 49	3087	82 48 24	3087	81 19 59	3087	79 51 33	3086
	SUN E.	127 58 47	3447	126 37 24	3447	125 16 1	3446	123 54 37	3445
28	α Aquilæ W.	94 55 29	3757	96 11 16	3757	97 27 3	3758	98 42 49	3759
	Fomalhaut W.	70 10 28	3427	71 32 14	3417	72 54 11	3408	74 16 19	3398
	α Pegasi W.	47 45 34	3420	49 7 28	3400	50 29 44	3382	51 52 21	3365
	Pollux E.	72 28 56	3074	71 0 15	3071	69 31 30	3068	68 2 41	3063
	SUN E.	117 7 6	3433	115 45 27	3429	114 23 43	3424	113 1 54	3420
29	α Aquilæ W.	105 1 11	3772	106 16 42	3776	107 32 9	3782	108 47 30	3788
	Fomalhaut W.	81 9 42	3351	82 32 55	3342	83 56 18	3332	85 19 53	3323
	α Pegasi W.	58 50 13	3285	60 14 42	3270	61 39 28	3256	63 4 31	3241
	Pollux E.	60 37 5	3036	59 7 37	3029	57 38 0	3022	56 8 14	3014
	SUN E.	106 11 18	3388	104 48 48	3380	103 26 9	3372	102 3 21	3364
30	Fomalhaut W.	92 20 29	3275	93 45 9	3265	95 10 1	3256	96 35 4	3246
	α Pegasi W.	70 14 6	3169	71 40 52	3154	73 7 56	3140	74 35 17	3125
	Pollux E.	48 36 55	2971	47 6 6	2961	45 35 4	2950	44 3 49	2940
	SUN E.	95 6 39	3313	93 42 43	3301	92 18 33	3289	90 54 9	3276
31	Fomalhaut W.	103 43 8	3199	105 9 18	3191	106 35 38	3182	108 2 9	3173
	α Pegasi W.	81 56 32	3051	83 25 42	3035	84 55 11	3021	86 24 58	3005
	α Arietis W.	38 58 48	2896	40 31 12	2879	42 3 58	2862	43 37 5	2845
	Pollux E.	36 24 9	2884	34 51 30	2873	33 18 36	2861	31 45 27	2848
	SUN E.	83 48 18	3208	82 22 18	3193	80 56 0	3178	79 29 24	3161

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
Tues.	1	^h 10 ^m 44 ^s 16.22	9.063	N. 8° 0' 47.4"	-54.71	15 53.81	64.39	0 18.90	0.791
Wed.	2	10 47 53.59	9.052	7 38 50.4	55.03	15 54.04	64.35	0 38.03	0.802
Thur.	3	10 51 30.71	9.042	7 16 46.0	55.34	15 54.27	64.31	0 57.41	0.812
Frid.	4	10 55 7.60	9.032	6 54 34.3	-55.63	15 54.50	64.28	1 17.02	0.822
Sat.	5	10 58 44.26	9.023	6 32 15.7	55.91	15 54.74	64.24	1 36.86	0.831
SUN.	6	11 2 20.71	9.015	6 9 50.7	56.17	15 54.98	64.21	1 56.91	0.839
Mon.	7	11 5 56.98	9.007	5 47 19.5	-56.42	15 55.23	64.18	2 17.14	0.847
Tues.	8	11 9 33.06	9.000	5 24 42.5	56.65	15 55.47	64.16	2 37.55	0.854
Wed.	9	11 13 8.99	8.994	5 2 0.0	56.87	15 55.72	64.14	2 58.12	0.860
Thur.	10	11 16 44.77	8.988	4 39 12.5	-57.08	15 55.98	64.12	3 18.84	0.866
Frid.	11	11 20 20.42	8.983	4 16 20.3	57.27	15 56.24	64.10	3 39.69	0.871
Sat.	12	11 23 55.96	8.979	3 53 23.6	57.44	15 56.50	64.09	4 0.64	0.875
SUN.	13	11 27 31.40	8.975	3 30 23.0	-57.60	15 56.76	64.08	4 21.70	0.879
Mon.	14	11 31 6.77	8.972	3 7 18.6	57.75	15 57.02	64.07	4 42.83	0.882
Tues.	15	11 34 42.08	8.970	2 44 10.9	57.89	15 57.29	64.07	5 4.01	0.884
Wed.	16	11 38 17.35	8.969	2 21 0.1	-58.01	15 57.56	64.07	5 25.24	0.885
Thur.	17	11 41 52.60	8.969	1 57 46.6	58.11	15 57.83	64.07	5 46.48	0.885
Frid.	18	11 45 27.85	8.970	1 34 30.8	58.20	15 58.10	64.07	6 7.72	0.884
Sat.	19	11 49 3.14	8.971	1 11 12.8	-58.28	15 58.37	64.08	6 28.94	0.883
SUN.	20	11 52 38.47	8.974	0 47 53.1	58.35	15 58.64	64.09	6 50.10	0.880
Mon.	21	11 56 13.87	8.977	0 24 32.0	58.41	15 58.91	64.10	7 11.19	0.877
Tues.	22	11 59 49.38	8.982	N. 0° 1' 9.7"	-58.45	15 59.18	64.12	7 32.18	0.872
Wed.	23	12 3 25.00	8.987	S. 0 22 13.5	58.48	15 59.45	64.14	7 53.06	0.867
Thur.	24	12 7 0.77	8.994	0 45 37.2	58.49	15 59.72	64.16	8 13.78	0.860
Frid.	25	12 10 36.70	9.001	1 9 1.0	-58.49	15 59.99	64.19	8 34.35	0.853
Sat.	26	12 14 12.83	9.010	1 32 24.8	58.48	16 0.25	64.22	8 54.71	0.844
SUN.	27	12 17 49.18	9.019	1 55 48.1	58.45	16 0.52	64.25	9 14.87	0.835
Mon.	28	12 21 25.77	9.030	2 19 10.6	-58.41	16 0.79	64.28	9 34.78	0.824
Tues.	29	12 25 2.61	9.041	2 42 32.0	58.36	16 1.06	64.32	9 54.44	0.813
Wed.	30	12 28 39.74	9.053	3 5 51.9	58.29	16 1.33	64.36	10 13.81	0.801
Thur.	31	12 32 17.16	9.066	S. 3 29 9.9	-58.21	16 1.60	64.40	10 32.88	0.788

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^s	^h ^m ^s
Tues.	1	10 44 16.27	9.063	N. 8 0 47.0	-54.72	0 18.90	0.792	10 44 35.17
Wed.	2	10 47 53.69	9.054	7 38 49.8	55.04	0 38.04	0.803	10 48 31.72
Thur.	3	10 51 30.86	9.044	7 16 45.0	55.35	0 57.42	0.813	10 52 28.28
Frid.	4	10 55 7.79	9.034	6 54 33.0	-55.64	1 17.04	0.822	10 56 24.83
Sat.	5	10 58 44.50	9.025	6 32 14.2	55.92	1 36.88	0.831	11 0 21.39
SUN.	6	11 2 21.00	9.017	6 9 48.8	56.19	1 56.94	0.839	11 4 17.94
Mon.	7	11 5 57.32	9.009	5 47 17.3	-56.44	2 17.17	0.847	11 8 14.49
Tues.	8	11 9 33.46	9.002	5 24 40.0	56.67	2 37.59	0.854	11 12 11.05
Wed.	9	11 13 9.44	8.996	5 1 57.2	56.89	2 58.16	0.860	11 16 7.60
Thur.	10	11 16 45.27	8.990	4 39 9.3	-57.09	3 18.89	0.866	11 20 4.16
Frid.	11	11 20 20.97	8.985	4 16 16.7	57.28	3 39.74	0.871	11 24 0.71
Sat.	12	11 23 56.56	8.981	3 53 19.7	57.46	4 0.70	0.875	11 27 57.26
SUN.	13	11 27 32.05	8.977	3 30 18.7	-57.62	4 21.76	0.879	11 31 53.82
Mon.	14	11 31 7.47	8.975	3 7 14.0	57.77	4 42.90	0.882	11 35 50.37
Tues.	15	11 34 42.83	8.973	2 44 5.9	57.90	5 4.09	0.884	11 39 46.92
Wed.	16	11 38 18.16	8.971	2 20 54.8	-58.02	5 25.32	0.885	11 43 43.48
Thur.	17	11 41 53.46	8.971	1 57 41.0	58.13	5 46.57	0.885	11 47 40.03
Frid.	18	11 45 28.77	8.972	1 34 24.8	58.22	6 7.81	0.885	11 51 36.58
Sat.	19	11 49 4.11	8.973	1 11 6.5	-58.30	6 29.03	0.883	11 55 33.14
SUN.	20	11 52 39.49	8.976	0 47 46.4	58.37	6 50.20	0.880	11 59 29.69
Mon.	21	11 56 14.95	8.979	0 24 24.9	58.42	7 11.30	0.877	12 3 26.24
Tues.	22	11 59 50.51	8.984	N. 0 1 2.3	-58.46	7 32.29	0.872	12 7 22.80
Wed.	23	12 3 26.18	8.990	S. 0 22 21.2	58.49	7 53.17	0.867	12 11 19.35
Thur.	24	12 7 2.00	8.997	0 45 45.2	58.50	8 13.90	0.860	12 15 15.90
Frid.	25	12 10 37.99	9.004	1 9 9.4	-58.51	8 34.47	0.853	12 19 12.46
Sat.	26	12 14 14.17	9.012	1 32 33.5	58.49	8 54.84	0.844	12 23 9.01
SUN.	27	12 17 50.57	9.022	1 55 57.1	58.47	9 14.99	0.835	12 27 5.57
Mon.	28	12 21 27.21	9.032	2 19 19.9	-58.43	9 34.91	0.825	12 31 2.12
Tues.	29	12 25 4.10	9.043	2 42 41.6	58.37	9 54.57	0.813	12 34 58.67
Wed.	30	12 28 41.28	9.055	3 6 1.8	58.30	10 13.95	0.801	12 38 55.23
Thur.	31	12 32 18.76	9.068	S. 3 29 20.2	-58.22	10 33.02	0.788	12 42 51.78

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

Diff. for 1 Hour,
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	245	159 30 17.6	29 33.1	145.34	+ 0.57	0.0037126	-42.9	h m s 13 13 14.52
2	246	160 28 26.6	27 42.0	145.42	0.48	0.0036090	43.4	13 9 18.61
3	247	161 26 37.7	25 53.0	145.50	0.37	0.0035041	44.0	13 5 22.70
4	248	162 24 50.7	24 5.9	145.58	+ 0.25	0.0033977	-44.6	13 1 26.80
5	249	163 23 5.6	22 20.6	145.66	+ 0.12	0.0032897	45.3	12 57 30.89
6	250	164 21 22.4	20 37.3	145.74	- 0.01	0.0031802	46.0	12 53 34.98
7	251	165 19 41.1	18 55.9	145.82	- 0.13	0.0030691	-46.6	12 49 39.07
8	252	166 18 1.6	17 16.3	145.89	0.24	0.0029564	47.2	12 45 43.16
9	253	167 16 23.8	15 38.4	145.96	0.33	0.0028423	47.9	12 41 47.26
10	254	168 14 47.8	14 2.2	146.03	- 0.41	0.0027266	-48.5	12 37 51.35
11	255	169 13 13.5	12 27.6	146.10	0.46	0.0026097	49.0	12 33 55.44
12	256	170 11 40.8	10 55.0	146.17	0.47	0.0024915	49.5	12 29 59.53
13	257	171 10 9.7	9 23.8	146.24	- 0.45	0.0023722	-49.9	12 26 3.62
14	258	172 8 40.2	7 54.2	146.31	0.40	0.0022521	50.2	12 22 7.72
15	259	173 7 12.3	6 26.2	146.37	0.33	0.0021312	50.5	12 18 11.81
16	260	174 5 46.0	4 59.8	146.44	- 0.24	0.0020097	-50.7	12 14 15.90
17	261	175 4 21.4	3 35.1	146.51	- 0.12	0.0018877	50.9	12 10 19.99
18	262	176 2 58.6	2 12.2	146.58	+ 0.01	0.0017654	51.0	12 6 24.09
19	263	177 1 37.4	0 50.9	146.66	+ 0.15	0.0016431	-51.0	12 2 28.18
20	264	177 60 18.1	59 31.4	146.73	0.28	0.0015206	51.0	11 58 32.27
21	265	178 59 0.5	58 13.7	146.81	0.40	0.0013982	51.0	11 54 36.36
22	266	179 57 44.9	56 58.0	146.89	+ 0.51	0.0012760	-50.9	11 50 40.46
23	267	180 56 31.4	55 44.4	146.98	0.59	0.0011539	50.8	11 46 44.55
24	268	181 55 19.9	54 32.8	147.07	0.65	0.0010321	50.8	11 42 48.64
25	269	182 54 10.7	53 23.5	147.16	+ 0.68	0.0009103	-50.7	11 38 52.73
26	270	183 53 3.4	52 16.1	147.25	0.68	0.0007886	50.7	11 34 56.83
27	271	184 51 58.5	51 11.1	147.34	0.65	0.0006671	50.6	11 31 0.92
28	272	185 50 55.8	50 8.3	147.44	+ 0.60	0.0005455	-50.7	11 27 5.01
29	273	186 49 55.4	49 7.8	147.53	0.51	0.0004238	50.7	11 23 9.10
30	274	187 48 57.5	48 9.7	147.63	0.40	0.0003020	50.8	11 19 13.20
31	275	188 48 1.8	47 13.9	147.73	+ 0.28	0.0001798	-51.0	11 15 17.29
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st .								
Diff. for 1 Hour, —9 ^h .8296. (Table II.)								

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	15 15.9	15 22.4	55 54.8	+1.88	56 18.4	+2.04	19 20.2	2.34	23.3
2	15 29.3	15 36.5	56 43.7	2.17	57 10.4	2.26	20 16.7	2.35	24.3
3	15 44.0	15 51.6	57 37.9	2.31	58 5.9	2.33	21 12.6	2.30	25.3
4	15 59.2	16 6.6	58 33.8	+2.29	59 0.8	+2.20	22 7.0	2.23	26.3
5	16 13.6	16 20.0	59 26.5	2.05	59 50.1	1.85	22 59.6	2.16	27.3
6	16 25.7	16 30.5	60 11.0	1.60	60 28.6	1.30	23 50.9	2.12	28.3
7	16 34.2	16 36.8	60 42.3	+0.96	60 51.9	+0.62	0		29.3
8	16 38.2	16 38.4	60 57.1	+0.25	60 57.8	-0.13	0 41.9	2.13	0.9
9	16 37.4	16 35.3	60 54.1	-0.48	60 46.2	0.81	1 33.7	2.19	1.9
10	16 32.1	16 28.1	60 34.6	-1.10	60 19.7	-1.36	2 27.4	2.29	2.9
11	16 23.2	16 17.8	60 2.0	1.57	59 42.1	1.72	3 23.7	2.40	3.9
12	16 12.0	16 5.9	59 20.7	1.83	58 58.2	1.90	4 22.5	2.49	4.9
13	15 59.6	15 53.3	58 35.1	-1.93	58 11.9	-1.92	5 22.6	2.51	5.9
14	15 47.0	15 40.9	57 49.0	1.89	57 26.6	1.83	6 22.3	2.45	6.9
15	15 35.0	15 29.4	57 5.0	1.75	56 44.5	1.67	7 19.4	2.31	7.9
16	15 24.1	15 19.2	56 25.1	-1.57	56 6.8	-1.47	8 12.7	2.13	8.9
17	15 14.5	15 10.3	55 49.7	1.37	55 34.0	1.26	9 1.8	1.96	9.9
18	15 6.3	15 2.7	55 19.4	1.16	55 6.1	1.06	9 47.1	1.82	10.9
19	14 59.4	14 56.4	54 54.0	-0.96	54 43.0	-0.87	10 29.5	1.72	11.9
20	14 53.7	14 51.3	54 33.2	0.77	54 24.5	0.68	11 9.9	1.66	12.9
21	14 49.3	14 47.6	54 17.0	0.58	54 10.7	0.48	11 49.5	1.64	13.9
22	14 46.1	14 45.1	54 5.5	-0.38	54 1.6	-0.26	12 29.1	1.67	14.9
23	14 44.4	14 44.1	53 59.1	-0.15	53 58.0	-0.03	13 9.8	1.73	15.9
24	14 44.2	14 44.8	53 58.4	+0.10	54 0.4	+0.24	13 52.4	1.82	16.9
25	14 45.8	14 47.3	54 4.1	+0.39	54 9.7	+0.55	14 37.6	1.94	17.9
26	14 49.4	14 52.0	54 17.2	0.71	54 26.8	0.89	15 25.8	2.07	18.9
27	14 55.2	14 58.9	54 38.5	1.07	54 52.4	1.25	16 16.9	2.18	19.9
28	15 3.3	15 8.3	55 8.5	+1.43	55 26.8	+1.62	17 10.3	2.26	20.9
29	15 13.9	15 20.0	55 47.3	1.80	56 9.9	1.96	18 4.9	2.28	21.9
30	15 26.7	15 33.8	56 34.3	2.11	57 0.4	2.23	18 59.4	2.25	22.9
31	15 41.3	15 49.1	57 27.9	+2.33	57 56.5	+2.41	19 52.8	2.20	23.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 1.					THURSDAY 3.				
0	5 21 37.55	2.3712	N 27 52 6.8	0.782	0	7 17 32.51	2.4219	N.25 27 53.0	6.855
1	5 23 59.92	2.3744	27 52 49.2	0.631	1	7 19 57.79	2.4206	25 20 56.9	7.013
2	5 26 22.48	2.3776	27 53 22.5	0.479	2	7 22 22.99	2.4193	25 13 51.4	7.171
3	5 28 45.24	2.3808	27 53 46.7	0.327	3	7 24 48.11	2.4180	25 6 36.4	7.329
4	5 31 8.18	2.3838	27 54 1.7	0.173	4	7 27 13.15	2.4166	24 59 11.9	7.486
5	5 33 31.30	2.3867	27 54 7.4	+ 0.018	5	7 29 38.10	2.4150	24 51 38.1	7.642
6	5 35 54.59	2.3896	27 54 3.9	- 0.136	6	7 32 2.95	2.4134	24 43 54.9	7.797
7	5 38 18.05	2.3923	27 53 51.1	0.291	7	7 34 27.71	2.4118	24 36 2.4	7.953
8	5 40 41.67	2.3949	27 53 29.0	0.446	8	7 36 52.37	2.4101	24 28 0.5	8.109
9	5 43 5.44	2.3974	27 52 57.6	0.602	9	7 39 16.92	2.4083	24 19 49.3	8.264
10	5 45 29.36	2.3999	27 52 16.8	0.759	10	7 41 41.36	2.4064	24 11 28.8	8.417
11	5 47 53.43	2.4023	27 51 26.6	0.916	11	7 44 5.69	2.4045	24 2 59.2	8.570
12	5 50 17.64	2.4046	27 50 26.9	1.073	12	7 46 29.90	2.4025	23 54 20.4	8.722
13	5 52 41.98	2.4068	27 49 17.8	1.231	13	7 48 53.99	2.4005	23 45 32.5	8.874
14	5 55 6.45	2.4089	27 47 59.2	1.388	14	7 51 17.96	2.3984	23 36 35.5	9.026
15	5 57 31.05	2.4109	27 46 31.2	1.547	15	7 53 41.80	2.3963	23 27 29.4	9.177
16	5 59 55.76	2.4127	27 44 53.6	1.707	16	7 56 5.51	2.3941	23 18 14.3	9.326
17	6 2 20.58	2.4145	27 43 6.4	1.866	17	7 58 29.09	2.3918	23 8 50.3	9.475
18	6 4 45.50	2.4162	27 41 9.7	2.025	18	8 0 52.53	2.3895	22 59 17.3	9.624
19	6 7 10.52	2.4178	27 39 3.4	2.185	19	8 3 15.83	2.3872	22 49 35.4	9.771
20	6 9 35.64	2.4193	27 36 47.5	2.346	20	8 5 38.99	2.3848	22 39 44.8	9.917
21	6 12 0.84	2.4207	27 34 21.9	2.507	21	8 8 2.01	2.3824	22 29 45.4	10.063
22	6 14 26.12	2.4219	27 31 46.7	2.667	22	8 10 24.88	2.3799	22 19 37.3	10.208
23	6 16 51.47	2.4231	N.27 29 1.9	2.827	23	8 12 47.60	2.3774	N.22 9 20.5	10.352
WEDNESDAY 2.					FRIDAY 4.				
0	6 19 16.90	2.4243	N.27 26 7.5	2.988	0	8 15 10.17	2.3749	N.21 58 55.1	10.494
1	6 21 42.39	2.4253	27 23 3.4	3.149	1	8 17 32.59	2.3723	21 48 21.2	10.636
2	6 24 7.93	2.4262	27 19 49.6	3.312	2	8 19 54.85	2.3697	21 37 38.8	10.777
3	6 26 33.53	2.4270	27 16 26.0	3.474	3	8 22 16.95	2.3670	21 26 47.9	10.918
4	6 28 59.17	2.4277	27 12 52.7	3.635	4	8 24 38.89	2.3643	21 15 48.6	11.057
5	6 31 24.85	2.4283	27 9 9.8	3.796	5	8 27 0.67	2.3616	21 4 41.0	11.195
6	6 33 50.56	2.4288	27 5 17.2	3.958	6	8 29 22.28	2.3588	20 53 25.2	11.332
7	6 36 16.30	2.4292	27 1 14.9	4.120	7	8 31 43.73	2.3561	20 42 1.2	11.468
8	6 38 42.06	2.4294	26 57 2.8	4.282	8	8 34 5.01	2.3533	20 30 29.0	11.603
9	6 41 7.83	2.4296	26 52 41.0	4.444	9	8 36 26.13	2.3506	20 18 48.8	11.737
10	6 43 33.61	2.4297	26 48 9.5	4.606	10	8 38 47.08	2.3478	20 7 0.6	11.870
11	6 45 59.40	2.4298	26 43 28.3	4.767	11	8 41 7.86	2.3449	19 55 4.4	12.002
12	6 48 25.19	2.4297	26 38 37.4	4.929	12	8 43 28.47	2.3421	19 43 0.4	12.132
13	6 50 50.97	2.4295	26 33 36.8	5.091	13	8 45 48.91	2.3392	19 30 48.6	12.261
14	6 53 16.73	2.4293	26 28 26.5	5.252	14	8 48 9.18	2.3364	19 18 29.1	12.389
15	6 55 42.48	2.4290	26 23 6.5	5.413	15	8 50 29.28	2.3336	19 6 1.9	12.517
16	6 58 8.21	2.4285	26 17 36.9	5.574	16	8 52 49.21	2.3307	18 53 27.1	12.642
17	7 0 33.90	2.4279	26 11 57.6	5.736	17	8 55 8.96	2.3278	18 40 44.9	12.766
18	7 2 59.56	2.4273	26 6 8.6	5.897	18	8 57 28.54	2.3249	18 27 55.2	12.890
19	7 5 25.18	2.4266	26 0 10.0	6.057	19	8 59 47.95	2.3221	18 14 58.1	13.012
20	7 7 50.75	2.4258	25 54 1.8	6.217	20	9 2 7.19	2.3192	18 1 53.8	13.132
21	7 10 16.28	2.4250	25 47 43.9	6.377	21	9 4 26.26	2.3164	17 48 42.3	13.251
22	7 12 41.75	2.4240	25 41 16.5	6.537	22	9 6 45.16	2.3136	17 35 23.7	13.369
23	7 15 7.16	2.4230	25 34 39.5	6.696	23	9 9 3.89	2.3107	17 21 58.0	13.486
24	7 17 32.51	2.4219	N.25 27 53.0	6.855	24	9 11 22.45	2.3079	N.17 8 25.4	13.601

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 5.					MONDAY 7.				
0	9 11 22.45	2.3079	N. 17 8 25.4	13.601	0	10 59 29.66	2.2156	N. 4 31 50.7	17.479
1	9 13 40.84	2.3051	16 54 45.9	13.715	1	11 1 42.58	2.2151	4 14 32.9	17.312
2	9 15 59.06	2.3023	16 40 59.6	13.827	2	11 3 55.47	2.2146	3 57 13.2	17.343
3	9 18 17.12	2.2996	16 27 6.6	13.938	3	11 6 8.33	2.2142	3 39 51.7	17.373
4	9 20 35.01	2.2967	16 13 7.0	14.048	4	11 8 21.17	2.2139	3 22 28.5	17.401
5	9 22 52.73	2.2939	15 59 0.8	14.157	5	11 10 34.00	2.2137	3 5 3.6	17.428
6	9 25 10.28	2.2912	15 44 48.2	14.263	6	11 12 46.81	2.2135	2 47 37.2	17.452
7	9 27 27.67	2.2885	15 30 29.2	14.369	7	11 14 59.62	2.2134	2 30 9.4	17.473
8	9 29 44.90	2.2859	15 16 3.9	14.472	8	11 17 12.42	2.2133	2 12 40.4	17.493
9	9 32 1.98	2.2833	15 1 32.5	14.574	9	11 19 25.22	2.2133	1 55 10.2	17.512
10	9 34 18.90	2.2807	14 46 55.0	14.675	10	11 21 38.02	2.2135	1 37 39.0	17.528
11	9 36 35.66	2.2780	14 32 11.5	14.775	11	11 23 50.84	2.2137	1 20 6.9	17.548
12	9 38 52.26	2.2754	14 17 22.0	14.873	12	11 26 3.67	2.2140	1 2 34.0	17.554
13	9 41 8.71	2.2729	14 2 26.7	14.969	13	11 28 16.52	2.2143	0 45 0.4	17.564
14	9 43 25.01	2.2705	13 47 25.7	15.064	14	11 30 29.39	2.2147	0 27 26.3	17.578
15	9 45 41.17	2.2681	13 32 19.0	15.157	15	11 32 42.29	2.2152	N. 0 9 51.7	17.579
16	9 47 57.18	2.2656	13 17 6.8	15.249	16	11 34 55.22	2.2158	S. 0 7 43.2	17.583
17	9 50 13.04	2.2632	13 1 49.1	15.339	17	11 37 8.19	2.2165	0 25 18.3	17.587
18	9 52 28.76	2.2608	12 46 26.1	15.427	18	11 39 21.20	2.2172	0 42 53.6	17.587
19	9 54 44.34	2.2586	12 30 57.8	15.514	19	11 41 34.25	2.2180	1 0 28.8	17.586
20	9 56 59.79	2.2564	12 15 24.4	15.599	20	11 43 47.36	2.2189	1 18 3.9	17.582
21	9 59 15.11	2.2542	11 59 45.9	15.683	21	11 46 0.52	2.2198	1 35 38.7	17.577
22	10 1 30.29	2.2520	11 44 2.4	15.765	22	11 48 13.74	2.2209	1 53 13.1	17.569
23	10 3 45.35	2.2499	N. 11 28 14.1	15.845	23	11 50 27.03	2.2220	S. 2 10 47.0	17.560
SUNDAY 6.					TUESDAY 8.				
0	10 6 0.28	2.2478	N. 11 12 21.0	15.923	0	11 52 40.38	2.2231	S. 2 28 20.3	17.549
1	10 8 15.09	2.2458	10 56 23.3	16.000	1	11 54 53.80	2.2244	2 45 52.9	17.536
2	10 10 29.78	2.2438	10 40 21.0	16.076	2	11 57 7.30	2.2258	3 3 24.6	17.520
3	10 12 44.35	2.2419	10 24 14.2	16.149	3	11 59 20.89	2.2272	3 20 55.3	17.502
4	10 14 58.81	2.2401	10 8 3.1	16.220	4	12 1 34.56	2.2286	3 38 24.9	17.483
5	10 17 13.16	2.2383	9 51 47.8	16.290	5	12 3 48.32	2.2302	3 55 53.3	17.462
6	10 19 27.41	2.2366	9 35 28.3	16.358	6	12 6 2.18	2.2318	4 13 20.4	17.439
7	10 21 41.55	2.2349	9 19 4.8	16.425	7	12 8 16.14	2.2335	4 30 46.0	17.414
8	10 23 55.59	2.2332	9 2 37.3	16.490	8	12 10 30.20	2.2353	4 48 10.1	17.387
9	10 26 9.53	2.2316	8 46 6.0	16.552	9	12 12 44.37	2.2371	5 5 32.5	17.358
10	10 28 23.38	2.2301	8 29 31.0	16.613	10	12 14 58.65	2.2390	5 22 53.1	17.327
11	10 30 37.14	2.2287	8 12 52.4	16.673	11	12 17 13.05	2.2410	5 40 11.7	17.293
12	10 32 50.82	2.2273	7 56 10.2	16.732	12	12 19 27.57	2.2431	5 57 28.3	17.258
13	10 35 4.41	2.2259	7 39 24.6	16.787	13	12 21 42.22	2.2452	6 14 42.7	17.221
14	10 37 17.93	2.2246	7 22 35.8	16.840	14	12 23 57.00	2.2474	6 31 54.8	17.182
15	10 39 31.37	2.2234	7 5 43.8	16.892	15	12 26 11.91	2.2497	6 49 4.6	17.142
16	10 41 44.74	2.2223	6 48 48.7	16.942	16	12 28 26.96	2.2520	7 6 11.8	17.098
17	10 43 58.05	2.2212	6 31 50.7	16.991	17	12 30 42.15	2.2544	7 23 16.4	17.053
18	10 46 11.29	2.2202	6 14 49.8	17.037	18	12 32 57.49	2.2569	7 40 18.2	17.007
19	10 48 24.47	2.2193	5 57 46.2	17.082	19	12 35 12.98	2.2595	7 57 17.2	16.957
20	10 50 37.60	2.2184	5 40 39.9	17.126	20	12 37 28.63	2.2621	8 14 13.1	16.906
21	10 52 50.68	2.2176	5 23 31.1	17.167	21	12 39 44.43	2.2647	8 31 5.9	16.853
22	10 55 3.71	2.2168	5 6 19.9	17.206	22	12 42 0.39	2.2674	8 47 55.5	16.798
23	10 57 16.70	2.2162	4 49 6.4	17.243	23	12 44 16.52	2.2703	9 4 41.7	16.742
24	10 59 29.66	2.2156	N. 4 31 50.7	17.279	24	12 46 32.83	2.2732	S. 9 21 24.5	16.683

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 9.					FRIDAY 11.				
0	12 46 32.83	2.2732	S. 9 21 24.5	16.685	0	14 39 52.44	2.4589	S. 20 58 51.3	11.704
1	12 48 49.31	2.2762	9 38 3.7	16.622	1	14 42 20.10	2.4631	21 10 29.2	11.559
2	12 51 5.97	2.2791	9 54 39.2	16.559	2	14 44 48.01	2.4672	21 21 58.4	11.413
3	12 53 22.80	2.2821	10 11 10.8	16.494	3	14 47 16.16	2.4722	21 33 18.8	11.267
4	12 55 39.82	2.2853	10 27 38.5	16.428	4	14 49 44.55	2.4752	21 44 30.4	11.118
5	12 57 57.03	2.2885	10 44 2.2	16.360	5	14 52 13.18	2.4791	21 55 33.0	10.968
6	13 0 14.44	2.2917	11 0 21.7	16.289	6	14 54 42.04	2.4830	22 6 26.6	10.818
7	13 2 32.04	2.2950	11 16 36.9	16.217	7	14 57 11.14	2.4869	22 17 11.1	10.666
8	13 4 49.84	2.2983	11 32 47.7	16.143	8	14 59 40.47	2.4907	22 27 46.5	10.513
9	13 7 7.84	2.3017	11 48 54.0	16.067	9	15 2 10.02	2.4944	22 38 12.6	10.358
10	13 9 26.05	2.3052	12 4 55.7	15.988	10	15 4 39.80	2.4982	22 48 29.4	10.202
11	13 11 44.47	2.3087	12 20 52.6	15.908	11	15 7 9.80	2.5019	22 58 36.8	10.045
12	13 14 3.10	2.3123	12 36 44.7	15.827	12	15 9 40.03	2.5056	23 8 34.8	9.887
13	13 16 21.95	2.3159	12 52 31.8	15.743	13	15 12 10.47	2.5091	23 18 23.3	9.727
14	13 18 41.01	2.3195	13 8 13.8	15.657	14	15 14 41.12	2.5126	23 28 2.1	9.567
15	13 21 0.29	2.3232	13 23 50.6	15.569	15	15 17 11.98	2.5160	23 37 31.3	9.406
16	13 23 19.80	2.3270	13 39 22.1	15.480	16	15 19 43.04	2.5193	23 46 50.8	9.243
17	13 25 39.53	2.3308	13 54 48.2	15.389	17	15 22 14.30	2.5226	23 56 0.5	9.079
18	13 27 59.49	2.3346	14 10 8.8	15.296	18	15 24 45.76	2.5259	24 5 0.3	8.914
19	13 30 19.68	2.3384	14 25 23.7	15.201	19	15 27 17.41	2.5291	24 13 50.2	8.749
20	13 32 40.10	2.3423	14 40 32.9	15.104	20	15 29 49.25	2.5321	24 22 30.2	8.582
21	13 35 0.76	2.3463	14 55 36.2	15.005	21	15 32 21.26	2.5350	24 31 0.1	8.415
22	13 37 21.66	2.3503	15 10 33.5	14.905	22	15 34 53.45	2.5380	24 39 20.0	8.247
23	13 39 42.80	2.3543	S. 15 25 24.8	14.803	23	15 37 25.82	2.5408	S. 24 47 29.7	8.077
THURSDAY 10.					SATURDAY 12.				
0	13 42 4.17	2.3583	S. 15 40 9.9	14.699	0	15 39 58.35	2.5435	S. 24 55 29.3	7.907
1	13 44 25.79	2.3624	15 54 48.7	14.593	1	15 42 31.04	2.5468	25 3 18.6	7.756
2	13 46 47.66	2.3665	16 9 21.1	14.486	2	15 45 3.89	2.5497	25 10 57.6	7.605
3	13 49 9.77	2.3706	16 23 47.0	14.377	3	15 47 36.89	2.5522	25 18 26.4	7.453
4	13 51 32.13	2.3747	16 38 6.3	14.266	4	15 50 10.03	2.5553	25 25 44.8	7.300
5	13 53 54.74	2.3789	16 52 18.9	14.153	5	15 52 43.31	2.5587	25 32 52.8	7.146
6	13 56 17.60	2.3831	17 6 24.7	14.039	6	15 55 16.72	2.5618	25 39 50.3	6.991
7	13 58 40.71	2.3873	17 20 23.6	13.923	7	15 57 50.25	2.5649	25 46 37.3	6.836
8	14 1 4.07	2.3915	17 34 15.5	13.805	8	16 0 23.91	2.5679	25 53 13.8	6.681
9	14 3 27.69	2.3957	17 48 0.2	13.685	9	16 2 57.68	2.5697	25 59 39.8	6.525
10	14 5 51.56	2.4000	18 1 37.7	13.564	10	16 5 31.55	2.5694	26 5 55.2	6.368
11	14 8 15.69	2.4042	18 15 7.9	13.442	11	16 8 5.53	2.5691	26 11 59.9	6.210
12	14 10 40.07	2.4085	18 28 30.7	13.318	12	16 10 39.60	2.5686	26 17 54.0	6.051
13	14 13 4.71	2.4127	18 41 46.0	13.192	13	16 13 13.76	2.5680	26 23 37.4	5.891
14	14 15 29.60	2.4169	18 54 53.7	13.063	14	16 15 47.99	2.5671	26 29 10.1	5.730
15	14 17 54.74	2.4212	19 7 53.6	12.933	15	16 18 22.29	2.5662	26 34 32.1	5.567
16	14 20 20.14	2.4254	19 20 45.7	12.803	16	16 20 56.66	2.5652	26 39 43.3	5.404
17	14 22 45.79	2.4297	19 33 30.0	12.672	17	16 23 31.08	2.5641	26 44 43.7	5.240
18	14 25 11.70	2.4339	19 46 6.3	12.538	18	16 26 5.55	2.5628	26 49 33.4	5.075
19	14 27 37.86	2.4381	19 58 34.5	12.402	19	16 28 40.06	2.5615	26 54 12.3	4.910
20	14 30 4.27	2.4423	20 10 54.5	12.265	20	16 31 14.61	2.5601	26 58 40.3	4.745
21	14 32 30.94	2.4466	20 23 6.3	12.127	21	16 33 49.19	2.5586	27 2 57.4	4.580
22	14 34 57.86	2.4507	20 35 9.7	11.987	22	16 36 23.79	2.5570	27 7 3.7	4.415
23	14 37 25.03	2.4548	20 47 4.7	11.847	23	16 38 58.40	2.5553	27 10 59.2	4.250
24	14 39 52.44	2.4589	S. 20 58 51.3	11.704	24	16 41 33.01	2.5536	S. 27 14 43.9	4.085

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 13.					TUESDAY 15.				
0	16 41 33.01	2.5768	S. 27 14 43.9	3.654	0	18 42 45.64	2.4280	S. 26 47 23.9	4.543
1	16 44 7.61	2.5767	27 18 17.7	3.472	1	18 45 11.15	2.4283	26 42 46.8	4.693
2	16 46 42.21	2.5765	27 21 40.6	3.291	2	18 47 36.32	2.4266	26 38 0.7	4.842
3	16 49 16.79	2.5761	27 24 52.6	3.110	3	18 50 1.15	2.4208	26 33 5.8	4.989
4	16 51 51.34	2.5755	27 27 53.8	2.929	4	18 52 25.62	2.4049	26 28 2.0	5.136
5	16 54 25.85	2.5748	27 30 44.1	2.748	5	18 54 49.74	2.3991	26 22 49.4	5.283
6	16 57 0.32	2.5740	27 33 23.5	2.567	6	18 57 13.51	2.3932	26 17 28.1	5.427
7	16 59 34.73	2.5730	27 35 52.1	2.387	7	18 59 36.92	2.3871	26 11 58.2	5.569
8	17 2 9.08	2.5720	27 38 9.9	2.207	8	19 1 59.96	2.3809	26 6 19.8	5.711
9	17 4 43.37	2.5708	27 40 16.9	2.026	9	19 4 22.63	2.3747	26 0 32.9	5.852
10	17 7 17.58	2.5695	27 42 13.0	1.846	10	19 6 44.93	2.3686	25 54 37.6	5.991
11	17 9 51.71	2.5680	27 43 58.4	1.667	11	19 9 6.86	2.3624	25 48 34.0	6.129
12	17 12 25.74	2.5663	27 45 33.0	1.487	12	19 11 28.42	2.3562	25 42 22.1	6.266
13	17 14 59.67	2.5646	27 46 56.8	1.308	13	19 13 49.60	2.3498	25 36 2.1	6.402
14	17 17 33.49	2.5628	27 48 9.9	1.129	14	19 16 10.39	2.3433	25 29 34.0	6.536
15	17 20 7.20	2.5608	27 49 12.3	0.951	15	19 18 30.80	2.3369	25 22 57.8	6.669
16	17 22 40.78	2.5586	27 50 4.0	0.773	16	19 20 50.82	2.3305	25 16 13.7	6.800
17	17 25 14.23	2.5563	27 50 45.0	0.595	17	19 23 10.46	2.3241	25 9 21.8	6.930
18	17 27 47.54	2.5539	27 51 15.4	0.418	18	19 25 29.71	2.3176	25 2 22.1	7.059
19	17 30 20.70	2.5514	27 51 35.2	0.242	19	19 27 48.57	2.3111	24 55 14.7	7.187
20	17 32 53.71	2.5487	27 51 44.4	- 0.065	20	19 30 7.04	2.3045	24 47 59.7	7.313
21	17 35 26.55	2.5459	27 51 43.0	+ 0.111	21	19 32 25.11	2.2979	24 40 37.1	7.438
22	17 37 59.22	2.5430	27 51 31.1	0.285	22	19 34 42.79	2.2913	24 33 7.1	7.562
23	17 40 31.71	2.5399	S. 27 51 8.8	0.459	23	19 37 0.07	2.2847	S. 24 25 29.7	7.685
MONDAY 14.					WEDNESDAY 16.				
0	17 43 4.01	2.5367	S. 27 50 36.0	0.633	0	19 39 16.95	2.2780	S. 24 17 44.9	7.807
1	17 45 36.12	2.5335	27 49 52.8	0.806	1	19 41 33.43	2.2714	24 9 52.9	7.926
2	17 48 8.03	2.5301	27 48 59.3	0.978	2	19 43 49.52	2.2648	24 1 53.8	8.044
3	17 50 39.73	2.5266	27 47 55.5	1.149	3	19 46 5.21	2.2582	23 53 47.6	8.162
4	17 53 11.22	2.5229	27 46 41.4	1.320	4	19 48 20.50	2.2515	23 45 34.4	8.277
5	17 55 42.48	2.5191	27 45 17.1	1.490	5	19 50 35.39	2.2448	23 37 14.3	8.392
6	17 58 13.51	2.5152	27 43 42.6	1.659	6	19 52 49.88	2.2382	23 28 47.3	8.506
7	18 0 44.31	2.5112	27 41 58.0	1.827	7	19 55 3.97	2.2315	23 20 13.6	8.617
8	18 3 14.86	2.5071	27 40 3.3	1.995	8	19 57 17.66	2.2248	23 11 33.2	8.728
9	18 5 45.16	2.5029	27 37 58.6	2.162	9	19 59 30.95	2.2182	23 2 46.2	8.837
10	18 8 15.21	2.4987	27 35 43.9	2.327	10	20 1 43.84	2.2115	22 53 52.7	8.946
11	18 10 45.00	2.4942	27 33 19.3	2.492	11	20 3 56.33	2.2049	22 44 52.7	9.053
12	18 13 14.51	2.4896	27 30 44.9	2.656	12	20 6 8.43	2.1983	22 35 46.3	9.158
13	18 15 43.75	2.4850	27 28 0.6	2.819	13	20 8 20.13	2.1917	22 26 33.7	9.262
14	18 18 12.71	2.4803	27 25 6.6	2.981	14	20 10 31.43	2.1851	22 17 14.9	9.365
15	18 20 41.38	2.4754	27 22 2.9	3.142	15	20 12 42.34	2.1785	22 7 49.9	9.467
16	18 23 9.76	2.4705	27 18 49.6	3.302	16	20 14 52.85	2.1719	21 58 18.9	9.566
17	18 25 37.84	2.4655	27 15 26.7	3.461	17	20 17 2.97	2.1653	21 48 42.0	9.665
18	18 28 5.62	2.4604	27 11 54.3	3.619	18	20 19 12.69	2.1587	21 38 59.1	9.763
19	18 30 33.09	2.4552	27 8 12.4	3.776	19	20 21 22.02	2.1522	21 29 10.4	9.859
20	18 33 0.25	2.4500	27 4 21.2	3.931	20	20 23 30.96	2.1456	21 19 16.0	9.954
21	18 35 27.09	2.4447	27 0 20.7	4.086	21	20 25 39.52	2.1390	21 9 15.9	10.048
22	18 37 53.61	2.4392	26 56 10.9	4.240	22	20 27 47.69	2.1324	20 59 10.2	10.141
23	18 40 19.79	2.4336	26 51 51.9	4.392	23	20 29 55.48	2.1258	20 48 59.0	10.232
24	18 42 45.64	2.4280	S. 26 47 23.9	4.543	24	20 32 2.88	2.1192	S. 20 38 42.4	10.322

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 17.					SATURDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	20 32 2.88	2.1202	S. 20 38 42.4	10.321	0	22 7 19.96	1.8709	S. 11 2 13.0	13.271
1	20 34 9.90	2.1138	20 28 20.5	10.410	1	22 9 12.10	1.8672	10 48 55.7	13.307
2	20 36 16.54	2.1076	20 17 53.2	10.498	2	22 11 4.03	1.8636	10 35 36.2	13.342
3	20 38 22.81	2.1013	20 7 20.7	10.584	3	22 12 55.74	1.8600	10 22 14.7	13.373
4	20 40 28.70	2.0951	19 56 43.1	10.669	4	22 14 47.23	1.8564	10 8 51.2	13.407
5	20 42 34.22	2.0889	19 46 0.4	10.753	5	22 16 38.51	1.8529	9 55 25.8	13.439
6	20 44 39.37	2.0827	19 35 12.7	10.836	6	22 18 29.58	1.8495	9 41 58.5	13.470
7	20 46 44.15	2.0766	19 24 20.1	10.917	7	22 20 20.45	1.8462	9 28 29.4	13.500
8	20 48 48.56	2.0705	19 13 22.7	10.997	8	22 22 11.12	1.8429	9 14 58.5	13.529
9	20 50 52.61	2.0643	19 2 20.5	11.076	9	22 24 1.60	1.8397	9 1 25.9	13.557
10	20 52 56.30	2.0581	18 51 13.6	11.153	10	22 25 51.89	1.8366	8 47 51.6	13.585
11	20 54 59.63	2.0520	18 40 2.1	11.230	11	22 27 41.99	1.8335	8 34 15.7	13.611
12	20 57 2.61	2.0457	18 28 46.0	11.306	12	22 29 31.91	1.8305	8 20 38.3	13.636
13	20 59 5.23	2.0408	18 17 25.4	11.379	13	22 31 21.65	1.8276	8 6 59.4	13.661
14	21 1 7.50	2.0350	18 6 0.5	11.451	14	22 33 11.22	1.8247	7 53 19.0	13.684
15	21 3 9.43	2.0292	17 54 31.3	11.523	15	22 35 0.61	1.8218	7 39 37.3	13.706
16	21 5 11.01	2.0235	17 42 57.8	11.594	16	22 36 49.83	1.8190	7 25 54.3	13.728
17	21 7 12.25	2.0179	17 31 20.0	11.664	17	22 38 38.89	1.8164	7 12 9.9	13.750
18	21 9 13.16	2.0123	17 19 38.1	11.732	18	22 40 27.80	1.8138	6 58 24.3	13.769
19	21 11 13.73	2.0067	17 7 52.2	11.799	19	22 42 16.55	1.8112	6 44 37.6	13.788
20	21 13 13.97	2.0012	16 56 2.3	11.865	20	22 44 5.15	1.8087	6 30 49.7	13.807
21	21 15 13.88	1.9957	16 44 8.4	11.930	21	22 45 53.60	1.8063	6 17 0.7	13.825
22	21 17 13.46	1.9903	16 32 10.7	11.995	22	22 47 41.91	1.8040	6 3 10.7	13.841
23	21 19 12.72	1.9851	S. 16 20 9.2	12.055	23	22 49 30.08	1.8018	S. 5 49 19.8	13.856
FRIDAY 18.					SUNDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	21 21 11.67	1.9798	S. 16 8 4.1	12.116	0	22 51 18.12	1.7996	S. 5 35 28.0	13.871
1	21 23 10.30	1.9746	15 55 55.3	12.177	1	22 53 6.03	1.7974	5 21 35.3	13.885
2	21 25 8.62	1.9694	15 43 42.9	12.237	2	22 54 53.81	1.7952	5 7 41.8	13.898
3	21 27 6.63	1.9642	15 31 26.9	12.295	3	22 56 41.46	1.7932	4 53 47.5	13.911
4	21 29 4.33	1.9590	15 19 7.5	12.352	4	22 58 28.99	1.7913	4 39 52.5	13.922
5	21 31 1.73	1.9548	15 6 44.7	12.407	5	23 0 16.41	1.7895	4 25 56.9	13.933
6	21 32 58.84	1.9493	14 54 18.7	12.461	6	23 2 3.73	1.7877	4 12 0.6	13.943
7	21 34 55.65	1.9444	14 41 49.4	12.515	7	23 3 50.94	1.7859	3 58 3.7	13.952
8	21 36 52.17	1.9396	14 29 16.9	12.568	8	23 5 38.04	1.7842	3 44 6.4	13.959
9	21 38 48.40	1.9348	14 16 41.2	12.620	9	23 7 25.04	1.7826	3 30 8.6	13.967
10	21 40 44.35	1.9301	14 4 2.5	12.671	10	23 9 11.95	1.7811	3 16 10.3	13.974
11	21 42 40.02	1.9255	13 51 20.7	12.721	11	23 10 58.77	1.7796	3 2 11.7	13.979
12	21 44 35.41	1.9209	13 38 36.0	12.769	12	23 12 45.50	1.7781	2 48 12.8	13.984
13	21 46 30.53	1.9164	13 25 48.4	12.817	13	23 14 32.14	1.7766	2 34 13.6	13.988
14	21 48 25.38	1.9120	13 12 58.0	12.863	14	23 16 18.71	1.7752	2 20 14.2	13.992
15	21 50 19.97	1.9077	13 0 4.9	12.908	15	23 18 5.21	1.7744	2 6 14.6	13.994
16	21 52 14.30	1.9033	12 47 9.1	12.952	16	23 19 51.64	1.7732	1 52 14.9	13.996
17	21 54 8.37	1.8990	12 34 10.7	12.995	17	23 21 38.00	1.7721	1 38 15.1	13.997
18	21 56 2.18	1.8948	12 21 9.7	13.037	18	23 23 24.29	1.7710	1 24 15.2	13.997
19	21 57 55.74	1.8907	12 8 6.2	13.079	19	23 25 10.52	1.7701	1 10 15.4	13.996
20	21 59 49.06	1.8867	11 55 0.2	13.119	20	23 26 56.70	1.7693	0 56 15.7	13.995
21	22 1 42.14	1.8827	11 41 51.9	13.158	21	23 28 42.83	1.7684	0 42 16.0	13.993
22	22 3 34.98	1.8787	11 28 41.2	13.197	22	23 30 28.91	1.7676	0 28 16.5	13.990
23	22 5 27.59	1.8748	11 15 28.2	13.235	23	23 32 14.95	1.7669	0 14 17.2	13.986
24	22 7 19.96	1.8709	S. 11 2 13.0	13.271	24	23 34 0.94	1.7662	S. 0 0 18.2	13.981

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 21.					WEDNESDAY 23.				
0	23 34 0.94	1.7662	S. 0 0 18.2	13.981	0	0 59 16.79	1.8099	N. 10 50 56.0	12.862
1	23 35 46.90	1.7657	N. 0 13 40.5	13.976	1	1 1 5.45	1.8122	11 3 46.4	12.818
2	23 37 32.83	1.7652	0 27 38.9	13.970	2	1 2 54.26	1.8147	11 16 34.2	12.775
3	23 39 18.73	1.7647	0 41 36.9	13.963	3	1 4 43.22	1.8172	11 29 19.4	12.732
4	23 41 4.60	1.7644	0 55 34.5	13.956	4	1 6 32.33	1.8197	11 42 2.0	12.687
5	23 42 50.46	1.7641	1 9 31.6	13.947	5	1 8 21.59	1.8223	11 54 41.8	12.641
6	23 44 36.30	1.7638	1 23 28.1	13.937	6	1 10 11.01	1.8250	12 7 18.9	12.595
7	23 46 22.12	1.7637	1 37 24.1	13.927	7	1 12 0.59	1.8277	12 19 53.2	12.548
8	23 48 7.94	1.7637	1 51 19.4	13.917	8	1 13 50.33	1.8304	12 32 24.7	12.501
9	23 49 53.76	1.7637	2 5 14.1	13.905	9	1 15 40.24	1.8333	12 44 53.4	12.453
10	23 51 39.58	1.7637	2 19 8.0	13.893	10	1 17 30.32	1.8362	12 57 19.1	12.405
11	23 53 25.40	1.7637	2 33 1.2	13.880	11	1 19 20.58	1.8392	13 9 41.8	12.354
12	23 55 11.22	1.7638	2 46 53.6	13.867	12	1 21 11.01	1.8420	13 22 1.6	12.304
13	23 56 57.05	1.7640	3 0 45.2	13.852	13	1 23 1.62	1.8450	13 34 18.3	12.252
14	23 58 42.90	1.7643	3 14 35.8	13.836	14	1 24 52.41	1.8481	13 46 31.8	12.199
15	0 0 28.77	1.7647	3 28 25.5	13.820	15	1 26 43.39	1.8512	13 58 42.1	12.145
16	0 2 14.66	1.7651	3 42 14.2	13.803	16	1 28 34.55	1.8544	14 10 49.2	12.092
17	0 4 0.58	1.7655	3 56 1.8	13.785	17	1 30 25.91	1.8576	14 22 53.1	12.038
18	0 5 46.52	1.7659	4 9 48.4	13.767	18	1 32 17.46	1.8608	14 34 53.7	11.984
19	0 7 32.49	1.7665	4 23 33.8	13.747	19	1 34 9.21	1.8641	14 46 50.9	11.925
20	0 9 18.50	1.7672	4 37 18.0	13.727	20	1 36 1.16	1.8675	14 58 44.7	11.867
21	0 11 4.56	1.7680	4 51 1.1	13.707	21	1 37 53.31	1.8709	15 10 35.0	11.809
22	0 12 50.66	1.7688	5 4 42.9	13.686	22	1 39 45.67	1.8744	15 22 21.8	11.750
23	0 14 36.81	1.7696	N. 5 18 23.4	13.663	23	1 41 38.24	1.8778	N. 15 34 5.0	11.691
TUESDAY 22.					THURSDAY 24.				
0	0 16 23.01	1.7704	N. 5 32 2.5	13.640	0	1 43 31.01	1.8813	N. 15 45 44.7	11.631
1	0 18 9.26	1.7714	5 45 40.2	13.617	1	1 45 24.00	1.8850	15 57 20.7	11.569
2	0 19 55.58	1.7725	5 59 16.5	13.592	2	1 47 17.21	1.8887	16 8 53.0	11.507
3	0 21 41.96	1.7736	6 12 51.3	13.567	3	1 49 10.64	1.8923	16 20 21.5	11.443
4	0 23 28.41	1.7747	6 26 24.5	13.540	4	1 51 4.29	1.8961	16 31 46.2	11.380
5	0 25 14.92	1.7758	6 39 56.1	13.514	5	1 52 58.17	1.8999	16 43 7.1	11.316
6	0 27 1.50	1.7770	6 53 26.2	13.487	6	1 54 52.28	1.9037	16 54 24.1	11.250
7	0 28 48.16	1.7784	7 6 54.6	13.458	7	1 56 46.62	1.9076	17 5 37.1	11.183
8	0 30 34.91	1.7798	7 20 21.2	13.429	8	1 58 41.19	1.9115	17 16 46.1	11.116
9	0 32 21.74	1.7812	7 33 46.1	13.399	9	2 0 36.00	1.9154	17 27 51.0	11.048
10	0 34 8.66	1.7827	7 47 9.1	13.368	10	2 2 31.04	1.9193	17 38 51.8	10.979
11	0 35 55.67	1.7843	8 0 30.3	13.337	11	2 4 26.32	1.9234	17 49 48.5	10.910
12	0 37 42.78	1.7860	8 13 49.6	13.306	12	2 6 21.85	1.9275	18 0 41.0	10.839
13	0 39 29.99	1.7877	8 27 7.0	13.272	13	2 8 17.62	1.9316	18 11 29.2	10.767
14	0 41 17.30	1.7894	8 40 22.3	13.238	14	2 10 13.64	1.9357	18 22 13.1	10.695
15	0 43 4.71	1.7911	8 53 35.6	13.204	15	2 12 9.91	1.9399	18 32 52.6	10.622
16	0 44 52.23	1.7930	9 6 46.8	13.169	16	2 14 6.43	1.9442	18 43 27.7	10.548
17	0 46 39.87	1.7950	9 19 55.9	13.134	17	2 16 3.21	1.9484	18 53 58.4	10.473
18	0 48 27.63	1.7970	9 33 2.9	13.097	18	2 18 0.24	1.9527	19 4 24.5	10.397
19	0 50 15.51	1.7990	9 46 7.6	13.059	19	2 19 57.53	1.9570	19 14 46.0	10.320
20	0 52 3.51	1.8010	9 59 10.0	13.021	20	2 21 55.08	1.9613	19 25 2.9	10.243
21	0 53 51.63	1.8031	10 12 10.1	12.982	21	2 23 52.89	1.9657	19 35 15.2	10.166
22	0 55 39.88	1.8053	10 25 7.8	12.942	22	2 25 50.97	1.9702	19 45 22.8	10.087
23	0 57 28.27	1.8076	10 38 3.1	12.902	23	2 27 49.31	1.9746	19 55 25.6	10.006
24	0 59 16.79	1.8099	N. 10 50 56.0	12.861	24	2 29 47.92	1.9791	N. 20 5 23.5	9.925

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 25.					SUNDAY 27.				
0	2 29 47.92	1.9791	N. 20 5 23.5	9.925	0	4 10 13.88	2.2053	N. 26 11 40.0	4.998
1	2 31 46.80	1.9836	20 15 16.6	9.843	1	4 12 26.33	2.2098	26 16 36.2	4.975
2	2 33 45.95	1.9881	20 25 4.7	9.760	2	4 14 39.05	2.2142	26 21 25.0	4.751
3	2 35 45.37	1.9927	20 34 47.8	9.676	3	4 16 52.03	2.2185	26 26 6.3	4.625
4	2 37 45.07	1.9972	20 44 25.8	9.592	4	4 19 5.27	2.2228	26 30 40.0	4.499
5	2 39 45.04	2.0018	20 53 58.8	9.507	5	4 21 18.76	2.2270	26 35 6.1	4.374
6	2 41 45.29	2.0065	21 3 26.6	9.420	6	4 23 32.51	2.2312	26 39 24.6	4.244
7	2 43 45.82	2.0112	21 12 49.2	9.333	7	4 25 46.51	2.2354	26 43 35.4	4.115
8	2 45 46.63	2.0158	21 22 6.6	9.245	8	4 28 0.76	2.2395	26 47 38.4	3.986
9	2 47 47.71	2.0204	21 31 18.6	9.156	9	4 30 15.25	2.2435	26 51 33.7	3.857
10	2 49 49.07	2.0251	21 40 25.3	9.067	10	4 32 29.98	2.2475	26 55 21.2	3.726
11	2 51 50.72	2.0299	21 49 26.6	8.976	11	4 34 44.95	2.2515	26 59 0.8	3.594
12	2 53 52.66	2.0347	21 58 22.4	8.884	12	4 37 0.16	2.2554	27 2 32.5	3.462
13	2 55 54.88	2.0394	22 7 12.7	8.792	13	4 39 15.60	2.2592	27 5 56.3	3.329
14	2 57 57.39	2.0442	22 15 57.4	8.698	14	4 41 31.27	2.2631	27 9 12.0	3.195
15	3 0 0.18	2.0489	22 24 36.5	8.604	15	4 43 47.17	2.2669	27 12 19.7	3.061
16	3 2 3.26	2.0537	22 33 9.9	8.509	16	4 46 3.30	2.2706	27 15 19.3	2.926
17	3 4 6.63	2.0585	22 41 37.6	8.412	17	4 48 19.64	2.2742	27 18 10.8	2.791
18	3 6 10.28	2.0633	22 49 59.4	8.315	18	4 50 36.20	2.2778	27 20 54.2	2.655
19	3 8 14.22	2.0682	22 58 15.4	8.218	19	4 52 52.97	2.2813	27 23 29.4	2.517
20	3 10 18.46	2.0731	23 6 25.6	8.120	20	4 55 9.95	2.2848	27 25 56.3	2.379
21	3 12 22.99	2.0779	23 14 29.8	8.020	21	4 57 27.14	2.2882	27 28 14.9	2.241
22	3 14 27.81	2.0827	23 22 28.0	7.919	22	4 59 44.53	2.2914	27 30 25.2	2.102
23	3 16 32.92	2.0875	N. 23 30 20.1	7.817	23	5 2 2.11	2.2946	N. 27 32 27.2	1.963
SATURDAY 26.					MONDAY 28.				
0	3 18 38.31	2.0923	N. 23 38 6.1	7.715	0	5 4 19.88	2.2978	N. 27 34 20.8	1.823
1	3 20 43.99	2.0972	23 45 45.9	7.613	1	5 6 37.84	2.3009	27 36 6.0	1.682
2	3 22 49.97	2.1021	23 53 19.6	7.509	2	5 8 55.99	2.3040	27 37 42.7	1.541
3	3 24 56.24	2.1069	24 0 47.0	7.403	3	5 11 14.32	2.3069	27 39 10.9	1.399
4	3 27 2.80	2.1117	24 8 8.0	7.297	4	5 13 32.82	2.3098	27 40 30.6	1.256
5	3 29 9.65	2.1166	24 15 22.7	7.191	5	5 15 51.50	2.3127	27 41 41.7	1.113
6	3 31 16.79	2.1214	24 22 30.9	7.083	6	5 18 10.35	2.3155	27 42 44.2	0.970
7	3 33 24.22	2.1262	24 29 32.6	6.974	7	5 20 29.36	2.3182	27 43 38.1	0.827
8	3 35 31.94	2.1310	24 36 27.8	6.866	8	5 22 48.53	2.3208	27 44 23.4	0.682
9	3 37 39.94	2.1358	24 43 16.5	6.756	9	5 25 7.85	2.3233	27 45 0.0	0.537
10	3 39 48.23	2.1406	24 49 58.5	6.644	10	5 27 27.32	2.3257	27 45 27.9	0.392
11	3 41 56.81	2.1454	24 56 33.8	6.532	11	5 29 46.93	2.3281	27 45 47.0	0.246
12	3 44 5.68	2.1501	25 3 2.3	6.418	12	5 32 6.69	2.3304	27 45 57.4	+ 0.100
13	3 46 14.83	2.1548	25 9 24.0	6.305	13	5 34 26.58	2.3326	27 45 59.0	- 0.047
14	3 48 24.26	2.1596	25 15 38.9	6.191	14	5 36 46.60	2.3347	27 45 51.8	0.094
15	3 50 33.98	2.1643	25 21 46.9	6.076	15	5 39 6.75	2.3368	27 45 35.7	0.242
16	3 52 43.98	2.1690	25 27 48.0	5.959	16	5 41 27.02	2.3388	27 45 10.8	0.489
17	3 54 54.26	2.1736	25 33 42.0	5.842	17	5 43 47.40	2.3406	27 44 37.0	0.637
18	3 57 4.81	2.1782	25 39 29.0	5.724	18	5 46 7.89	2.3424	27 43 54.3	0.786
19	3 59 15.64	2.1827	25 45 8.9	5.605	19	5 48 28.49	2.3442	27 43 2.7	0.935
20	4 1 26.74	2.1873	25 50 41.6	5.485	20	5 50 49.19	2.3458	27 42 2.1	1.085
21	4 3 38.12	2.1919	25 56 7.1	5.365	21	5 53 9.99	2.3474	27 40 52.5	1.235
22	4 5 49.77	2.1964	26 1 25.4	5.244	22	5 55 30.88	2.3489	27 39 33.9	1.384
23	4 8 1.69	2.2009	26 6 36.4	5.122	23	5 57 51.85	2.3503	27 38 6.4	1.533
24	4 10 13.88	2.2053	N. 26 11 40.0	4.998	24	6 0 12.91	2.3517	N. 27 36 29.9	1.682

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 29.					THURSDAY, OCTOBER 1.				
0	6 0 12.91	2.3517	N.27 36 29.9	1.684	0	7 53 6.82	2.3265	N.23 21 57.0	2.847
1	6 2 34.05	2.3528	27 34 44.3	1.835	<div>PHASES OF THE MOON.</div> <div><div>● New Moon Sept. 7 1 43.3</div><div>☾ First Quarter 13 16 9.5</div><div>○ Full Moon 21 10 49.3</div><div>☾ Last Quarter 29 13 58.4</div></div>				
2	6 4 55.25	2.3539	27 32 49.7	1.986					
3	6 7 16.52	2.3550	27 30 46.0	2.137					
4	6 9 37.85	2.3559	27 28 33.3	2.288					
5	6 11 59.23	2.3568	27 26 11.5	2.439					
6	6 14 20.67	2.3577	27 23 40.6	2.592					
7	6 16 42.16	2.3584	27 21 0.6	2.744					
8	6 19 3.68	2.3590	27 18 11.5	2.895					
9	6 21 25.24	2.3596	27 15 13.4	3.045					
10	6 23 46.83	2.3601	27 12 6.1	3.197					
11	6 26 8.45	2.3605	27 8 49.7	3.350	<div><div>☾ Perigee Sept. 8 7.9</div><div>☾ Apogee 23 14.8</div></div>				
12	6 28 30.09	2.3608	27 5 24.1	3.502					
13	6 30 51.74	2.3610	27 1 49.4	3.654					
14	6 33 13.41	2.3612	26 58 5.6	3.806					
15	6 35 35.09	2.3613	26 54 12.7	3.957					
16	6 37 56.77	2.3613	26 50 10.7	4.109					
17	6 40 18.45	2.3612	26 45 59.6	4.261					
18	6 42 40.12	2.3611	26 41 39.3	4.414					
19	6 45 1.78	2.3608	26 37 9.9	4.566					
20	6 47 23.42	2.3605	26 32 31.4	4.717					
21	6 49 45.04	2.3602	26 27 43.9	4.868					
22	6 52 6.64	2.3597	26 22 47.3	5.019					
23	6 54 28.21	2.3592	N.26 17 41.6	5.171					
WEDNESDAY 30.									
0	6 56 49.75	2.3587	N.26 12 26.8	5.322					
1	6 59 11.25	2.3580	26 7 3.0	5.474					
2	7 1 32.71	2.3572	26 1 30.1	5.625					
3	7 3 54.12	2.3564	25 55 48.2	5.773					
4	7 6 15.48	2.3556	25 49 57.3	5.923					
5	7 8 36.79	2.3547	25 43 57.4	6.073					
6	7 10 58.04	2.3537	25 37 48.5	6.222					
7	7 13 19.23	2.3526	25 31 30.7	6.372					
8	7 15 40.35	2.3515	25 25 3.9	6.522					
9	7 18 1.41	2.3504	25 18 28.1	6.671					
10	7 20 22.40	2.3492	25 11 43.4	6.818					
11	7 22 43.31	2.3479	25 4 49.9	6.966					
12	7 25 4.14	2.3465	24 57 47.5	7.113					
13	7 27 24.89	2.3451	24 50 36.3	7.260					
14	7 29 45.55	2.3436	24 43 16.3	7.407					
15	7 32 6.12	2.3421	24 35 47.4	7.554					
16	7 34 26.60	2.3406	24 28 9.8	7.699					
17	7 36 46.99	2.3390	24 20 23.5	7.845					
18	7 39 7.28	2.3373	24 12 28.4	7.990					
19	7 41 27.47	2.3356	24 4 24.7	8.134					
20	7 43 47.56	2.3339	23 56 12.3	8.278					
21	7 46 7.54	2.3321	23 47 51.3	8.422					
22	7 48 27.41	2.3302	23 39 21.7	8.564					
23	7 50 47.17	2.3284	23 30 43.6	8.706					
24	7 53 6.82	2.3265	N.23 21 57.0	8.847					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	α Pegasi W.	87 55 5	2989	89 25 31	2973	90 56 17	2958	92 27 22	2942
	α Arietis W.	45 10 34	2829	46 44 24	2811	48 18 37	2795	49 53 12	2777
	SUN E.	78 2 28	3145	76 35 13	3129	75 7 38	3111	73 39 42	3094
2	α Arietis W.	57 51 54	2688	59 28 50	2670	61 6 10	2652	62 43 55	2632
	Aldebaran W.	27 36 13	3018	29 6 4	2966	30 36 59	2920	32 8 53	2876
	MARS W.	24 51 54	2990	26 22 19	2956	27 53 27	2925	29 25 14	2895
	SUN E.	66 14 37	3003	64 44 28	2985	63 13 56	2965	61 43 0	2946
3	α Arietis W.	70 59 3	2539	72 39 22	2520	74 20 7	2502	76 1 18	2482
	Aldebaran W.	40 1 7	2700	41 37 47	2669	43 15 8	2641	44 53 7	2614
	MARS W.	37 13 6	2765	38 48 20	2741	40 24 6	2717	42 0 23	2694
	SUN E.	54 2 11	2848	52 28 46	2828	50 54 55	2809	49 20 39	2789
4	α Arietis W.	84 33 48	2391	86 17 36	2373	88 1 50	2355	89 46 29	2337
	Aldebaran W.	53 12 3	2489	54 53 32	2467	56 35 32	2445	58 18 3	2423
	MARS W.	50 9 24	2585	51 48 40	2564	53 28 25	2543	55 8 38	2523
	SUN E.	41 22 53	2692	39 46 3	2674	38 8 48	2655	36 31 8	2638
5	Aldebaran W.	66 58 0	2326	68 43 22	2308	70 29 10	2292	72 15 22	2275
	MARS W.	63 36 27	2431	65 19 18	2414	67 2 33	2398	68 46 11	2381
	SUN E.	28 16 51	2553	26 36 51	2538	24 56 30	2523	23 15 49	2510
8	SUN W.	13 20 40	2350	15 5 26	2342	16 50 24	2337	18 35 30	2333
	SATURN E.	45 42 11	2118	43 51 39	2122	42 1 13	2128	40 10 56	2135
	Antares E.	68 51 44	2023	66 58 45	2023	65 5 46	2023	63 12 47	2023
9	SUN W.	27 21 31	2338	29 6 35	2342	30 51 33	2347	32 36 24	2353
	Antares E.	53 48 31	2037	51 55 55	2042	50 3 27	2048	48 11 7	2054
	α Aquilæ E.	105 52 42	2781	104 17 49	2774	102 42 47	2769	101 7 38	2765
10	SUN W.	41 18 11	2393	43 1 56	2402	44 45 28	2412	46 28 45	2423
	Antares E.	38 52 9	2093	37 0 59	2103	35 10 4	2113	33 19 24	2123
	α Aquilæ E.	93 11 40	2779	91 36 44	2787	90 1 59	2797	88 27 27	2808
11	SUN W.	55 1 6	2485	56 42 41	2498	58 23 57	2512	60 4 54	2525
	VENUS W.	37 52 53	2601	39 31 47	2612	41 10 25	2624	42 48 47	2638
	α Aquilæ E.	80 39 10	2890	79 6 38	2911	77 34 33	2934	76 2 57	2959
	Fomalhaut E.	105 4 21	2523	103 23 40	2531	101 43 10	2539	100 2 51	2549
12	SUN W.	68 24 41	2599	70 3 37	2615	71 42 12	2630	73 20 26	2646
	VENUS W.	50 56 6	2707	52 32 37	2721	54 8 49	2737	55 44 40	2751
	Spica W.	36 10 3	2298	37 56 6	2311	39 41 49	2325	41 27 12	2339
	α Aquilæ E.	68 33 26	3110	67 5 28	3145	65 38 13	3183	64 11 44	3223
	Fomalhaut E.	91 44 59	2609	90 6 16	2623	88 27 52	2638	86 49 48	2654
13	SUN W.	81 26 19	2724	83 2 27	2740	84 38 14	2756	86 13 40	2772
	VENUS W.	63 38 56	2829	65 12 46	2845	66 46 16	2860	68 19 26	2876
	Spica W.	50 9 4	2410	51 52 25	2424	53 35 26	2438	55 18 6	2453
	SATURN W.	28 17 26	2593	29 56 45	2583	31 36 4	2585	33 15 20	2588
	Fomalhaut E.	78 45 1	2741	77 9 15	2760	75 33 54	2780	73 59 0	2800
	α Pegasi E.	100 34 55	2601	98 56 1	2614	97 17 25	2627	95 39 7	2640

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Pegasi W. α Arietis W. SUN E.	93 58 47 51 28 10 72 11 25	2927 2760 3077	95 30 32 53 3 31 70 42 47	2928 2742 3058	97 2 36 54 39 15 69 13 46	2896 2724 3040	98 35 0 56 15 23 67 44 23	2880 2707 3022
2	α Arietis W. Aldebaran W. MARS W. SUN E.	64 22 6 33 41 43 30 57 39 60 11 40	2614 2836 2867 2927	66 0 42 35 15 24 32 30 40 58 39 55	2396 2799 2841 2908	67 39 43 36 49 53 34 4 15 57 7 46	2377 2764 2815 2887	69 19 10 38 25 8 35 38 24 55 35 11	2358 2751 2769 2866
3	α Arietis W. Aldebaran W. MARS W. SUN E.	77 42 56 46 31 43 43 37 11 47 45 57	2464 2587 2672 2769	79 25 0 48 10 56 45 14 29 46 10 49	2443 2561 2649 2730	81 7 30 49 50 44 46 52 18 44 35 16	2427 2536 2627 2711	82 50 26 51 31 7 48 30 36 42 59 17	2409 2512 2605 2712
4	α Arietis W. Aldebaran W. MARS W. SUN E.	91 31 34 60 1 5 56 49 19 34 53 4	2321 2403 2504 2620	93 17 3 61 44 36 58 30 27 33 14 36	2304 2522 2485 2602	95 2 57 63 28 36 60 12 1 31 35 44	2287 2563 2467 2585	96 49 15 65 13 4 61 54 1 29 56 29	2271 2544 2448 2569
5	Aldebaran W. MARS W. SUN E.	74 1 58 70 30 13 21 34 50	2260 2366 2497	75 48 57 72 14 37 19 53 33	2245 2350 2427	77 36 18 73 59 23 18 12 1	2231 2336 2477	79 24 0 75 44 30 16 30 15	2216 2322 2467
8	SUN W. SATURN E. Antares E.	20 20 42 38 20 50 61 19 49	2331 2144 2025	22 5 56 36 30 58 59 26 53	2331 2155 2027	23 51 10 34 41 23 57 34 1	2333 2169 2030	25 36 22 32 52 9 55 41 13	2335 2125 2033
9	SUN W. Antares E. α Aquilæ E.	34 21 6 46 18 57 99 32 24	2359 2061 2764	36 5 39 44 26 57 97 57 9	2367 2068 2765	37 50 1 42 35 9 96 21 55	2375 2076 2768	39 34 12 40 43 33 94 46 45	2383 2084 2772
10	SUN W. Antares E. α Aquilæ E.	48 11 47 31 29 0 86 53 9	2435 2134 2221	49 54 32 29 38 52 85 19 8	2446 2145 2236	51 37 1 27 49 1 83 45 27	2459 2157 2252	53 19 12 25 59 28 82 12 7	2471 2169 2270
11	SUN W. VENUS W. α Aquilæ E. Fomalhaut E.	61 45 32 44 26 51 74 31 53 98 22 46	2540 2650 2925 2559	63 25 50 46 4 38 73 1 21 96 42 55	2555 2664 3014 2570	65 5 47 47 42 6 71 31 25 95 3 19	2569 2678 3043 2583	66 45 24 49 19 16 70 2 6 93 24 0	2584 2692 3075 2596
12	SUN W. VENUS W. Spica W. α Aquilæ E. Fomalhaut E.	74 58 19 57 20 12 43 12 15 62 46 4 85 12 6	2661 2766 2353 3268 2669	76 35 51 58 55 24 44 56 58 61 21 15 83 34 45	2678 2782 2367 3313 2687	78 13 1 60 30 15 46 41 20 59 57 19 81 57 47	2693 2798 2381 3363 2704	79 49 50 62 4 46 48 25 22 58 34 20 80 21 12	2708 2814 2395 3415 2722
13	SUN W. VENUS W. Spica W. SATURN W. Fomalhaut E. α Pegasi E.	87 48 45 69 52 15 57 0 26 34 54 31 72 24 32 94 1 7	2787 2892 2467 2594 2821 2655	89 23 30 71 24 44 58 42 26 36 33 34 70 50 32 92 23 26	2805 2907 2481 2600 2843 2668	90 57 54 72 56 54 60 24 6 38 12 29 69 17 0 90 46 3	2818 2924 2495 2607 2866 2682	92 31 58 74 28 43 62 5 26 39 51 14 67 43 57 89 8 59	2834 2939 2510 2616 2890 2696

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
14	SUN	W.	94 5 42	2849	95 39 6	2864	97 12 11	2879	98 44 57	2894
	VENUS	W.	76 0 13	2954	77 31 24	2969	79 2 15	2984	80 32 48	2999
	Spica	W.	63 46 26	2523	65 27 7	2537	67 7 29	2551	68 47 32	2564
	SATURN	W.	41 29 47	2625	43 8 8	2634	44 46 17	2643	46 24 13	2654
	Fomalhaut	E.	66 11 25	2914	64 39 24	2939	63 7 54	2965	61 36 57	2991
	α Pegasi	E.	87 32 14	2711	85 55 49	2725	84 19 43	2741	82 43 57	2756
15	SUN	W.	106 24 7	2965	107 55 3	2979	109 25 42	2993	110 56 3	3006
	VENUS	W.	88 0 55	3072	89 29 39	3086	90 58 6	3100	92 26 16	3114
	Spica	W.	77 3 13	2629	78 41 28	2642	80 19 26	2655	81 57 7	2666
	SATURN	W.	54 30 21	2707	56 6 52	2718	57 43 8	2729	59 19 10	2739
	Antares	W.	31 9 31	2686	32 47 51	2699	34 25 53	2651	36 3 39	2665
	Fomalhaut	E.	54 11 3	3146	52 43 49	3182	51 17 18	3220	49 51 32	3260
	α Pegasi	E.	74 50 9	2834	73 16 25	2851	71 43 3	2866	70 10 1	2883
16	Spica	W.	90 1 32	2725	91 37 39	2735	93 13 32	2747	94 49 10	2757
	SATURN	W.	67 15 49	2792	68 50 27	2802	70 24 52	2812	71 59 4	2822
	Antares	W.	44 8 26	2721	45 44 38	2732	47 20 35	2743	48 56 18	2754
	α Pegasi	E.	62 30 21	2772	60 59 33	2991	59 29 9	3010	57 59 9	3030
	α Arietis	E.	103 58 5	2738	102 22 16	2749	100 46 41	2760	99 11 20	2770
17	SATURN	W.	79 46 52	2870	81 19 49	2880	82 52 34	2888	84 25 8	2898
	Antares	W.	56 51 28	2803	58 25 52	2813	60 0 3	2822	61 34 2	2831
	α Arietis	E.	91 17 58	2820	89 43 56	2829	88 10 6	2838	86 36 28	2847
18	SATURN	W.	92 5 9	2939	93 36 38	2948	95 7 56	2956	96 39 4	2964
	Antares	W.	69 21 10	2873	70 54 4	2881	72 26 47	2889	73 59 20	2896
	α Arietis	E.	78 51 7	2891	77 18 36	2898	75 46 15	2906	74 14 4	2914
	Aldebaran	E.	110 31 52	2956	109 0 44	2963	107 29 45	2969	105 58 54	2975
19	SATURN	W.	104 12 20	3001	105 42 31	3008	107 12 34	3015	108 42 28	3022
	Antares	W.	81 39 48	2931	83 11 28	2938	84 42 59	2944	86 14 22	2950
	α Arietis	E.	66 35 34	2951	65 4 20	2958	63 33 15	2965	62 2 18	2972
	Aldebaran	E.	98 26 32	3006	96 56 27	3012	95 26 29	3018	93 56 39	3024
	MARS	E.	108 24 36	3114	106 56 44	3121	105 29 0	3126	104 1 22	3133
20	Antares	W.	93 49 23	2980	95 20 1	2985	96 50 33	2990	98 20 58	2995
	α Aquilæ	W.	48 22 29	3379	49 28 9	3382	50 34 41	3387	51 42 1	3392
	α Arietis	E.	54 29 42	3005	52 59 35	3012	51 29 37	3018	49 59 46	3025
	Aldebaran	E.	86 29 17	3053	85 0 10	3060	83 31 11	3065	82 2 18	3070
	MARS	E.	96 44 58	3159	95 18 0	3165	93 51 9	3170	92 24 24	3175
21	α Aquilæ	W.	57 28 48	4098	58 39 50	4011	59 51 19	3984	61 3 14	3961
	α Arietis	E.	42 32 33	3056	41 3 30	3064	39 34 36	3070	38 5 50	3077
	Aldebaran	E.	74 39 37	3098	73 11 25	3104	71 43 20	3110	70 15 22	3115
	MARS	E.	85 12 4	3197	83 45 51	3202	82 19 44	3206	80 53 42	3209
22	α Aquilæ	W.	67 8 3	3871	68 21 52	3856	69 35 56	3844	70 50 13	3832
	Fomalhaut	W.	41 1 48	3860	42 15 48	3818	43 30 32	3780	44 45 55	3746
	Aldebaran	E.	62 57 13	3143	61 29 55	3149	60 2 45	3134	58 35 41	3161
	MARS	E.	73 44 36	3227	72 18 59	3231	70 53 26	3233	69 27 56	3236
	Pollux	E.	105 16 42	3060	103 47 43	3063	102 18 48	3065	100 49 56	3069

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	SUN W.	100 17 24	2909	101 49 32	2923	103 21 22	2938	104 52 53	2951
	VENUS W.	82 3 2	3014	83 32 58	3029	85 2 35	3043	86 31 54	3058
	Spica W.	70 27 17	2577	72 6 43	2591	73 45 51	2604	75 24 41	2617
	SATURN W.	48 1 55	2664	49 39 23	2675	51 16 37	2686	52 53 36	2696
	Fomalhaut E.	60 6 33	3019	58 36 44	3049	57 7 32	3080	55 38 58	3112
	α Pegasi E.	81 8 31	2771	79 33 25	2786	77 58 39	2802	76 24 14	2818
15	SUN W.	112 26 8	3030	113 55 56	3033	115 25 28	3046	116 54 44	3058
	VENUS W.	93 54 9	3127	95 21 46	3139	96 49 8	3153	98 16 14	3166
	Spica W.	83 34 32	2679	85 11 40	2690	86 48 33	2702	88 25 10	2713
	SATURN W.	60 54 58	2790	62 30 31	2760	64 5 51	2771	65 40 57	2782
	Antares W.	37 41 8	2675	39 18 21	2687	40 55 18	2698	42 32 0	2710
	Fomalhaut E.	48 26 34	3303	47 2 26	3348	45 39 10	3398	44 16 51	3451
	α Pegasi E.	68 37 21	2900	67 5 2	2918	65 33 6	2935	64 1 32	2954
16	Spica W.	96 24 34	2767	97 59 45	2778	99 34 42	2788	101 9 26	2798
	SATURN W.	73 33 3	2832	75 6 49	2842	76 40 22	2852	78 13 43	2861
	Antares W.	50 31 46	2764	52 7 1	2774	53 42 3	2784	55 16 52	2794
	α Pegasi E.	56 29 33	3051	55 0 23	3073	53 31 40	3095	52 3 24	3119
	α Arietis E.	97 36 13	2781	96 1 20	2791	94 26 40	2801	92 52 13	2810
17	SATURN W.	85 57 30	2906	87 29 41	2915	89 1 41	2924	90 33 30	2931
	Antares W.	63 7 50	2839	64 41 27	2848	66 14 52	2857	67 48 6	2865
	α Arietis E.	85 3 1	2856	83 29 46	2865	81 56 42	2873	80 23 49	2882
18	SATURN W.	98 10 2	2971	99 40 51	2979	101 11 30	2986	102 42 0	2994
	Antares W.	75 31 44	2903	77 3 59	2911	78 36 4	2918	80 8 0	2924
	α Arietis E.	72 42 3	2922	71 10 12	2929	69 38 30	2936	68 6 57	2944
	Aldebaran E.	104 28 10	2981	102 57 34	2988	101 27 6	2993	99 56 45	3000
19	SATURN W.	110 12 13	3030	111 41 49	3036	113 11 17	3043	114 40 37	3050
	Antares W.	87 45 37	2956	89 16 45	2962	90 47 45	2968	92 18 38	2974
	α Arietis E.	60 31 30	2978	59 0 50	2985	57 30 19	2992	55 59 56	2999
	Aldebaran E.	92 26 56	3030	90 57 20	3036	89 27 52	3042	87 58 31	3047
	MARS E.	102 33 52	3138	101 6 29	3143	99 39 12	3149	98 12 2	3154
20	Antares W.	99 51 17	3001	101 21 29	3005	102 51 36	3009	104 21 37	3014
	α Aquilæ E.	52 50 6	4178	53 58 53	4139	55 8 17	4103	56 18 16	4070
	α Arietis E.	48 30 4	3031	47 0 30	3037	45 31 3	3043	44 1 44	3050
	Aldebaran E.	80 33 32	3076	79 4 53	3082	77 36 21	3087	76 7 56	3092
	MARS E.	90 57 45	3180	89 31 12	3184	88 4 44	3188	86 38 21	3193
21	α Aquilæ W.	62 15 32	3939	63 28 12	3920	64 41 11	3902	65 54 29	3886
	α Arietis E.	36 37 12	3084	35 8 43	3092	33 40 24	3100	32 12 14	3108
	Aldebaran E.	68 47 31	3121	67 19 47	3126	65 52 9	3132	64 24 38	3137
	MARS E.	79 27 44	3214	78 1 51	3217	76 36 2	3220	75 10 17	3224
22	α Aquilæ W.	72 4 42	3821	73 19 22	3813	74 34 11	3804	75 49 9	3796
	Fomalhaut W.	46 1 54	3714	47 18 26	3687	48 35 27	3662	49 52 55	3637
	Aldebaran E.	57 8 45	3167	55 41 56	3173	54 15 14	3179	52 48 40	3186
	MARS E.	68 2 30	3239	66 37 7	3242	65 11 47	3244	63 46 30	3247
	Pollux E.	99 21 8	3071	97 52 23	3073	96 23 40	3075	94 55 0	3078

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	α Aquilæ	W.	77 4 15	3790	78 19 28	3784	79 34 47	3778	80 50 12	3773
	Fomalhaut	W.	51 10 49	3616	52 29 6	3597	53 47 44	3579	55 6 41	3562
	Aldebaran	E.	51 22 14	3193	49 55 56	3200	48 29 47	3207	47 3 46	3213
	MARS	E.	62 21 16	3248	60 56 4	3250	59 30 54	3253	58 5 47	3253
	Pollux	E.	93 26 23	3079	91 57 48	3081	90 29 15	3082	89 0 44	3083
24	α Aquilæ	W.	87 8 16	3760	88 24 0	3758	89 39 46	3758	90 55 32	3757
	Fomalhaut	W.	61 45 38	3495	63 6 8	3485	64 26 49	3474	65 47 42	3465
	α Pegasi	W.	39 29 15	3572	40 48 20	3543	42 7 57	3516	43 28 3	3493
	Aldebaran	E.	39 56 17	3265	38 31 24	3276	37 6 45	3290	35 42 22	3305
	MARS	E.	51 0 35	3260	49 35 37	3260	48 10 39	3261	46 45 42	3261
	Pollux	E.	81 38 27	3087	80 10 2	3087	78 41 36	3087	77 13 10	3087
25	α Aquilæ	W.	97 14 15	3765	98 29 54	3768	99 45 29	3771	101 1 1	3776
	Fomalhaut	W.	72 34 38	3423	73 56 29	3415	75 18 29	3408	76 40 37	3400
	α Pegasi	W.	50 14 35	3397	51 36 55	3381	52 59 33	3367	54 22 27	3353
	MARS	E.	39 41 2	3262	38 16 6	3263	36 51 11	3263	35 26 16	3263
	Pollux	E.	69 50 47	3080	68 22 13	3078	66 53 37	3076	65 24 58	3073
	Regulus	E.	106 44 26	3069	105 15 38	3067	103 46 48	3065	102 17 55	3061
	JUPITER	E.	107 45 23	3143	106 18 5	3140	104 50 44	3138	103 23 20	3135
26	Fomalhaut	W.	83 33 14	3367	84 56 8	3361	86 19 9	3355	87 42 17	3349
	α Pegasi	W.	61 20 47	3291	62 45 9	3279	64 9 45	3268	65 34 34	3256
	Pollux	E.	58 0 48	3056	56 31 44	3052	55 2 35	3047	53 33 20	3042
	Regulus	E.	94 52 26	3042	93 23 5	3037	91 53 38	3031	90 24 4	3026
	JUPITER	E.	96 5 20	3115	94 37 29	3110	93 9 31	3105	91 41 27	3099
27	Fomalhaut	W.	94 39 45	3318	96 3 36	3312	97 27 34	3306	98 51 39	3300
	α Pegasi	W.	72 41 57	3201	74 8 5	3190	75 34 26	3179	77 1 0	3168
	α Arietis	W.	29 23 39	3060	30 52 38	3046	32 21 54	3033	33 51 26	3019
	Pollux	E.	46 5 26	3013	44 35 29	3005	43 5 23	2998	41 35 8	2991
	Regulus	E.	82 54 24	2993	81 24 2	2985	79 53 30	2976	78 22 47	2968
	JUPITER	E.	84 19 12	3065	82 50 19	3056	81 21 16	3047	79 52 2	3039
	SUN	E.	119 15 48	3370	117 52 57	3361	116 29 56	3352	115 6 45	3343
28	α Pegasi	W.	84 17 12	3111	85 45 8	3099	87 13 19	3087	88 41 44	3075
	α Arietis	W.	41 23 8	2955	42 54 17	2942	44 25 42	2929	45 57 24	2916
	Regulus	E.	70 46 22	2919	69 14 27	2908	67 42 18	2896	66 9 54	2884
	JUPITER	E.	72 23 1	2989	70 52 35	2977	69 21 54	2966	67 50 59	2954
	SUN	E.	108 7 55	3288	106 43 30	3277	105 18 52	3265	103 53 59	3253
29	α Pegasi	W.	96 7 35	3014	97 37 31	3001	99 7 43	2988	100 38 11	2975
	α Arietis	W.	53 40 19	2845	55 13 49	2829	56 47 39	2814	58 21 49	2798
	Regulus	E.	58 23 57	2820	56 49 55	2805	55 15 34	2791	53 40 54	2776
	JUPITER	E.	60 12 25	2888	58 39 51	2874	57 6 59	2859	55 33 48	2845
	SUN	E.	96 45 39	3182	95 19 8	3166	93 52 18	3151	92 25 10	3135
30	α Arietis	W.	66 17 51	2716	67 54 9	2699	69 30 50	2682	71 7 54	2664
	Aldebaran	W.	35 28 26	2912	37 0 30	2880	38 33 15	2848	40 6 40	2820
	Regulus	E.	45 42 36	2698	44 5 53	2681	42 28 48	2664	40 51 20	2647
	JUPITER	E.	47 42 54	2765	46 7 40	2748	44 32 4	2731	42 56 5	2713
	SUN	E.	85 4 32	3051	83 35 22	3032	82 5 49	3014	80 35 54	2995

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	α Aquilæ W.	82 5 42	3769	83 21 16	3767	84 36 53	3764	85 52 33	3761
	Fomalhaut W.	56 25 57	3546	57 45 30	3533	59 5 18	3519	60 25 21	3506
	Aldebaran E.	45 37 55	3224	44 12 14	3232	42 46 43	3242	41 21 24	3253
	MARS E.	56 40 41	3255	55 15 37	3257	53 50 35	3258	52 25 34	3259
	Pollux E.	87 32 14	3085	86 3 46	3086	84 35 19	3087	83 6 53	3087
24	α Aquilæ W.	92 11 19	3758	93 27 5	3759	94 42 50	3760	95 58 34	3763
	Fomalhaut W.	67 8 45	3456	68 29 58	3446	69 51 22	3438	71 12 55	3430
	α Pegasi W.	44 48 35	3471	46 9 32	3450	47 30 52	3431	48 52 33	3413
	Aldebaran E.	34 18 16	3321	32 54 29	3341	31 31 5	3364	30 8 7	3392
	MARS E.	45 20 45	3262	43 55 49	3262	42 30 53	3262	41 5 57	3263
	Pollux E.	75 44 44	3086	74 16 17	3084	72 47 48	3083	71 19 18	3082
25	α Aquilæ W.	102 16 28	3781	103 31 50	3786	104 47 7	3792	106 2 17	3799
	Fomalhaut W.	78 2 53	3395	79 25 17	3387	80 47 48	3380	82 10 27	3373
	α Pegasi W.	55 45 37	3340	57 9 2	3326	58 32 43	3314	59 56 38	3302
	MARS E.	34 1 21	3263	32 36 26	3264	31 11 32	3264	29 46 38	3265
	Pollux E.	63 56 16	3070	62 27 30	3068	60 58 41	3064	59 29 47	3060
	Regulus E.	100 48 58	3058	99 19 57	3055	97 50 52	3051	96 21 42	3046
	JUPITER E.	101 55 53	3122	100 28 22	3126	99 0 46	3124	97 33 6	3119
26	Fomalhaut W.	89 5 32	3343	90 28 54	3336	91 52 24	3330	93 16 1	3324
	α Pegasi W.	66 59 37	3245	68 24 53	3235	69 50 21	3224	71 16 2	3212
	Pollux E.	52 3 59	3096	50 34 31	3031	49 4 57	3023	47 35 15	3019
	Regulus E.	88 54 24	3021	87 24 37	3014	85 54 41	3007	84 24 37	3000
	JUPITER E.	90 13 16	3093	88 44 58	3086	87 16 31	3079	85 47 56	3072
27	Fomalhaut W.	100 15 50	3294	101 40 9	3288	103 4 34	3282	104 29 6	3277
	α Pegasi W.	78 27 47	3157	79 54 48	3146	81 22 2	3134	82 49 30	3123
	α Arietis W.	35 21 15	3006	36 51 20	2994	38 21 40	2981	39 52 16	2969
	Pollux E.	40 4 44	2984	38 34 11	2976	37 3 28	2969	35 32 36	2960
	Regulus E.	76 51 54	2958	75 20 49	2950	73 49 33	2939	72 18 4	2929
	JUPITER E.	78 22 38	3030	76 53 2	3020	75 23 14	3010	73 53 14	3000
	SUN E.	113 43 23	3332	112 19 49	3323	110 56 4	3312	109 32 6	3300
28	α Pegasi W.	90 10 24	3063	91 39 19	3051	93 8 29	3039	94 37 54	3026
	α Arietis W.	47 29 23	2901	49 1 40	2887	50 34 15	2873	52 7 8	2859
	Regulus E.	64 37 15	2872	63 4 20	2859	61 31 9	2847	59 57 42	2833
	JUPITER E.	66 19 48	2942	64 48 22	2929	63 16 40	2916	61 44 41	2902
	SUN E.	102 28 52	3239	101 3 29	3225	99 37 49	3211	98 11 53	3196
29	α Pegasi W.	102 8 55	2962	103 39 55	2950	105 11 11	2937	106 42 43	2924
	α Arietis W.	59 56 19	2782	61 31 10	2766	63 6 22	2750	64 41 56	2734
	Regulus E.	52 5 55	2761	50 30 36	2746	48 54 57	2730	47 18 57	2714
	JUPITER E.	54 0 18	2829	52 26 28	2814	50 52 18	2798	49 17 47	2781
	SUN E.	90 57 43	3119	89 29 56	3102	88 1 49	3085	86 33 21	3068
30	α Arietis W.	72 45 22	2646	74 23 14	2629	76 1 30	2611	77 40 10	2592
	Aldebaran W.	41 40 42	2792	43 15 21	2761	44 50 36	2738	46 26 26	2712
	Regulus E.	39 13 29	2629	37 35 14	2612	35 56 36	2594	34 17 33	2577
	JUPITER E.	41 19 43	2695	39 42 57	2678	38 5 48	2660	36 28 15	2642
	SUN E.	79 5 35	2977	77 34 53	2953	76 3 48	2939	74 32 18	2920

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		^h ^m ^s	^s	[°] ['] ["]	["]	['] ["]	^s	^m ^s	^s
Thur.	1	12 32 17.16	9.066	S. 3 29 9.9	-58.21	16 1.60	64.40	10 32.88	0.788
Frid.	2	12 35 54.92	9.080	3 52 25.8	58.11	16 1.87	64.45	10 51.63	0.774
Sat.	3	12 39 33.00	9.094	4 15 39.0	57.99	16 2.15	64.50	11 10.05	0.760
SUN.	4	12 43 11.45	9.110	4 38 49.3	-57.86	16 2.42	64.55	11 28.11	0.744
Mon.	5	12 46 50.28	9.126	5 1 56.2	57.71	16 2.69	64.60	11 45.78	0.728
Tues.	6	12 50 29.50	9.143	5 24 59.4	57.54	16 2.97	64.66	12 3.07	0.712
Wed.	7	12 54 9.12	9.160	5 47 58.4	-57.36	16 3.25	64.72	12 19.96	0.695
Thur.	8	12 57 49.17	9.178	6 10 52.9	57.16	16 3.53	64.79	12 36.42	0.677
Frid.	9	13 1 29.66	9.197	6 33 42.5	56.95	16 3.81	64.85	12 52.43	0.658
Sat.	10	13 5 10.61	9.216	6 56 26.7	-56.72	16 4.09	64.92	13 8.00	0.639
SUN.	11	13 8 52.03	9.236	7 19 5.2	56.48	16 4.37	65.00	13 23.09	0.619
Mon.	12	13 12 33.94	9.257	7 41 37.6	56.22	16 4.65	65.07	13 37.70	0.598
Tues.	13	13 16 16.35	9.278	8 4 3.6	-55.94	16 4.93	65.15	13 51.80	0.577
Wed.	14	13 19 59.28	9.300	8 26 22.6	55.64	16 5.21	65.23	14 5.38	0.555
Thur.	15	13 23 42.76	9.323	8 48 34.4	55.33	16 5.49	65.31	14 18.43	0.532
Frid.	16	13 27 26.79	9.347	9 10 38.6	-55.01	16 5.77	65.40	14 30.91	0.508
Sat.	17	13 31 11.40	9.371	9 32 34.8	54.67	16 6.05	65.49	14 42.83	0.484
SUN.	18	13 34 56.60	9.396	9 54 22.7	54.31	16 6.32	65.58	14 54.14	0.459
Mon.	19	13 38 42.42	9.422	10 16 1.9	-53.94	16 6.60	65.67	15 4.86	0.433
Tues.	20	13 42 28.86	9.449	10 37 31.9	53.55	16 6.87	65.76	15 14.94	0.406
Wed.	21	13 46 15.97	9.477	10 58 52.6	53.15	16 7.14	65.86	15 24.36	0.379
Thur.	22	13 50 3.74	9.505	11 20 3.4	-52.74	16 7.40	65.96	15 33.12	0.351
Frid.	23	13 53 52.20	9.534	11 41 4.0	52.31	16 7.67	66.06	15 41.19	0.322
Sat.	24	13 57 41.38	9.564	12 1 54.0	51.86	16 7.93	66.16	15 48.55	0.292
SUN.	25	14 1 31.27	9.595	12 22 33.1	-51.39	16 8.19	66.26	15 55.19	0.261
Mon.	26	14 5 21.91	9.626	12 43 0.9	50.91	16 8.44	66.37	16 1.09	0.230
Tues.	27	14 9 13.31	9.658	13 3 16.9	50.42	16 8.69	66.48	16 6.23	0.198
Wed.	28	14 13 5.48	9.690	13 23 20.8	-49.90	16 8.94	66.59	16 10.60	0.166
Thur.	29	14 16 58.44	9.723	13 43 12.2	49.37	16 9.19	66.70	16 14.19	0.133
Frid.	30	14 20 52.19	9.757	14 2 50.6	48.82	16 9.44	66.81	16 16.98	0.100
Sat.	31	14 24 46.76	9.791	14 22 15.6	48.26	16 9.68	66.92	16 18.97	0.066
SUN.	32	14 28 42.14	9.825	S. 14 41 26.8	-47.67	16 9.93	67.03	16 20.14	0.032

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.18 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Thur.	1	^h 12 ^m 32 ^s 18.76	9.068	S. 3 29 20.2	-58.22	^m 10 ^s 33.02	0.788	^h 12 ^m 42 ^s 51.78
Frid.	2	12 35 56.56	9.082	3 52 36.3	58.12	10 51.77	0.774	12 46 48.33
Sat.	3	12 39 34.70	9.096	4 15 49.8	58.00	11 10.19	0.760	12 50 44.89
SUN.	4	12 43 13.19	9.112	4 39 0.4	-57.87	11 28.25	0.744	12 54 41.44
Mon.	5	12 46 52.07	9.128	5 2 7.6	57.72	11 45.93	0.728	12 58 37.99
Tues.	6	12 50 31.33	9.145	5 25 11.0	57.55	12 3.22	0.712	13 2 34.55
Wed.	7	12 54 11.00	9.162	5 48 10.2	-57.37	12 20.10	0.695	13 6 31.10
Thur.	8	12 57 51.10	9.180	6 11 5.0	57.17	12 36.56	0.677	13 10 27.66
Frid.	9	13 1 31.63	9.199	6 33 54.7	56.96	12 52.58	0.658	13 14 24.21
Sat.	10	13 5 12.63	9.218	6 56 39.2	-56.73	13 8.14	0.639	13 18 20.76
SUN.	11	13 8 54.09	9.238	7 19 17.8	56.48	13 23.23	0.619	13 22 17.32
Mon.	12	13 12 36.04	9.259	7 41 50.4	56.22	13 37.83	0.598	13 26 13.87
Tues.	13	13 16 18.49	9.280	8 4 16.5	-55.94	13 51.93	0.577	13 30 10.42
Wed.	14	13 20 1.47	9.302	8 26 35.7	55.65	14 5.51	0.555	13 34 6.98
Thur.	15	13 23 44.98	9.325	8 48 47.6	55.34	14 18.55	0.532	13 38 3.53
Frid.	16	13 27 29.05	9.349	9 10 52.0	-55.01	14 31.03	0.508	13 42 0.09
Sat.	17	13 31 13.70	9.373	9 32 48.3	54.67	14 42.94	0.484	13 45 56.64
SUN.	18	13 34 58.94	9.398	9 54 36.2	54.31	14 54.26	0.459	13 49 53.20
Mon.	19	13 38 44.79	9.424	10 16 15.4	-53.94	15 4.96	0.433	13 53 49.75
Tues.	20	13 42 31.27	9.450	10 37 45.5	53.56	15 15.04	0.406	13 57 46.30
Wed.	21	13 46 18.40	9.478	10 59 6.2	53.16	15 24.46	0.379	14 1 42.86
Thur.	22	13 50 6.21	9.506	11 20 17.0	-52.74	15 33.21	0.350	14 5 39.41
Frid.	23	13 53 54.70	9.535	11 41 17.6	52.31	15 41.27	0.321	14 9 35.97
Sat.	24	13 57 43.90	9.565	12 2 7.7	51.86	15 48.63	0.291	14 13 32.52
SUN.	25	14 1 33.82	9.596	12 22 46.7	-51.39	15 55.26	0.261	14 17 29.08
Mon.	26	14 5 24.48	9.627	12 43 14.4	50.91	16 1.15	0.230	14 21 25.63
Tues.	27	14 9 15.90	9.659	13 3 30.4	50.41	16 6.29	0.198	14 25 22.19
Wed.	28	14 13 8.10	9.691	13 23 34.2	-49.90	16 10.65	0.166	14 29 18.74
Thur.	29	14 17 1.07	9.724	13 43 25.5	49.37	16 14.23	0.133	14 33 15.30
Frid.	30	14 20 54.84	9.757	14 3 3.8	48.82	16 17.01	0.099	14 37 11.85
Sat.	31	14 24 49.42	9.791	14 22 28.7	48.25	16 18.98	0.065	14 41 8.41
SUN.	32	14 28 44.82	9.825	S. 14 41 39.8	-47.66	16 20.14	0.031	14 45 4.96

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour,
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	275	188 48 1.8	47 13.9	147.73	+ 0.28	0.0001798	-51.0	h m s 11 15 17.29
2	276	189 47 8.4	46 20.4	147.82	0.15	0.0000573	51.1	11 11 21.38
3	277	190 46 17.3	45 29.2	147.92	+ 0.02	9.9999344	51.3	11 7 25.47
4	278	191 45 28.4	44 40.2	148.01	- 0.11	9.9998109	-51.6	11 3 29.56
5	279	192 44 41.7	43 53.4	148.10	0.23	9.9996869	51.8	10 59 33.66
6	280	193 43 57.2	43 8.8	148.19	0.33	9.9995623	52.0	10 55 37.75
7	281	194 43 14.6	42 26.1	148.27	- 0.41	9.9994372	-52.2	10 51 41.84
8	282	195 42 34.2	41 45.6	148.36	0.46	9.9993116	52.4	10 47 45.93
9	283	196 41 55.8	41 7.1	148.44	0.48	9.9991857	52.6	10 43 50.02
10	284	197 41 19.2	40 30.4	148.52	- 0.46	9.9990593	-52.7	10 39 54.12
11	285	198 40 44.5	39 55.6	148.59	0.42	9.9989327	52.8	10 35 58.21
12	286	199 40 11.6	39 22.6	148.67	0.35	9.9988059	52.8	10 32 2.30
13	287	200 39 40.4	38 51.3	148.74	- 0.26	9.9986793	-52.7	10 28 6.39
14	288	201 39 11.0	38 21.8	148.81	0.15	9.9985528	52.6	10 24 10.49
15	289	202 38 43.3	37 53.9	148.88	- 0.03	9.9984268	52.4	10 20 14.58
16	290	203 38 17.4	37 27.9	148.96	+ 0.10	9.9983013	-52.1	10 16 18.67
17	291	204 37 53.4	37 3.8	149.03	0.24	9.9981766	51.8	10 12 22.76
18	292	205 37 31.0	36 41.3	149.11	0.36	9.9980526	51.4	10 8 26.85
19	293	206 37 10.5	36 20.7	149.19	+ 0.47	9.9979296	-51.0	10 4 30.94
20	294	207 36 51.8	36 1.8	149.26	0.55	9.9978077	50.5	10 0 35.04
21	295	208 36 35.0	35 44.9	149.34	0.61	9.9976870	50.0	9 56 39.13
22	296	209 36 20.3	35 30.1	149.42	+ 0.65	9.9975675	-49.5	9 52 43.22
23	297	210 36 7.4	35 17.1	149.51	0.65	9.9974493	49.0	9 48 47.31
24	298	211 35 56.8	35 6.3	149.59	0.63	9.9973324	48.5	9 44 51.40
25	299	212 35 48.1	34 57.5	149.68	+ 0.57	9.9972167	-48.0	9 40 55.49
26	300	213 35 41.6	34 50.8	149.77	0.49	9.9971021	47.5	9 36 59.58
27	301	214 35 37.3	34 46.4	149.86	0.39	9.9969887	47.0	9 33 3.67
28	302	215 35 35.1	34 44.1	149.95	+ 0.27	9.9968764	-46.6	9 29 7.76
29	303	216 35 35.2	34 44.0	150.05	+ 0.14	9.9967651	46.2	9 25 11.85
30	304	217 35 37.4	34 46.1	150.14	0.00	9.9966545	45.8	9 21 15.94
31	305	218 35 41.9	34 50.4	150.22	- 0.14	9.9965448	45.5	9 17 20.03
32	306	219 35 48.4	34 56.8	150.31	- 0.25	9.9964357	-45.3	9 13 24.12

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1st.

Diff. for 1 Hour,
—9^h.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.									
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	15 41.3	15 49.1	57 27.9	+2.33	57 56.5	+2.41	19 52.8	2.20	23.9
2	15 57.0	16 4.9	58 25.6	2.42	58 54.6	2.39	20 44.9	2.14	24.9
3	16 12.6	16 19.9	59 22.9	2.30	59 49.8	2.15	21 35.8	2.11	25.9
4	16 26.7	16 32.7	60 14.6	+1.95	60 36.6	+1.69	22 26.6	2.12	26.9
5	16 37.7	16 41.6	60 55.1	1.37	61 9.5	1.00	23 18.2	2.19	27.9
6	16 44.3	16 45.6	61 19.2	+0.60	61 24.0	+0.18	6		28.9
7	16 45.4	16 44.0	61 23.6	-0.24	61 18.2	-0.65	0 11.9	2.30	0.6
8	16 41.2	16 37.2	61 7.9	1.04	60 53.3	1.38	1 8.6	2.43	1.6
9	16 32.1	16 26.2	60 34.7	1.69	60 12.8	1.93	2 8.5	2.55	2.6
10	16 19.6	16 12.4	59 48.5	-2.10	59 22.3	-2.23	3 10.5	2.61	3.6
11	16 5.0	15 57.4	58 55.0	2.30	58 27.1	2.32	4 12.7	2.56	4.6
12	15 49.9	15 42.4	57 59.4	2.29	57 32.2	2.23	5 12.6	2.41	5.6
13	15 35.3	15 28.5	57 6.0	-2.13	56 41.1	-2.01	6 8.2	2.22	6.6
14	15 22.2	15 16.3	56 17.8	1.87	55 56.2	1.73	6 59.2	2.03	7.6
15	15 10.9	15 6.0	55 36.4	1.57	55 18.5	1.41	7 45.7	1.86	8.6
16	15 1.7	14 57.9	55 2.6	-1.25	54 48.5	-1.10	8 28.8	1.74	9.6
17	14 54.6	14 51.7	54 36.3	0.94	54 25.9	0.80	9 9.6	1.67	10.6
18	14 49.4	14 47.4	54 17.2	0.65	54 10.2	0.53	9 49.2	1.64	11.6
19	14 45.9	14 44.8	54 4.6	-0.40	54 0.6	-0.28	10 28.6	1.65	12.6
20	14 44.1	14 43.8	53 58.0	-0.16	53 56.8	-0.05	11 8.8	1.71	13.6
21	14 43.8	14 44.2	53 56.8	+0.06	53 58.2	+0.17	11 50.8	1.80	14.6
22	14 44.9	14 45.9	54 0.8	+0.27	54 4.7	+0.38	12 35.3	1.91	15.6
23	14 47.4	14 49.2	54 10.0	0.50	54 16.7	0.61	13 22.6	2.03	16.6
24	14 51.4	14 54.0	54 24.7	0.73	54 34.3	0.86	14 12.8	2.14	17.6
25	14 57.0	15 0.5	54 45.4	+1.00	54 58.2	+1.13	15 5.2	2.21	18.6
26	15 4.4	15 8.8	55 12.6	1.27	55 28.7	1.42	15 58.7	2.23	19.6
27	15 13.7	15 19.0	55 46.6	1.56	56 6.2	1.70	16 52.1	2.20	20.6
28	15 24.8	15 31.0	56 27.5	+1.84	56 50.3	+1.96	17 44.3	2.14	21.6
29	15 37.7	15 44.6	57 14.6	2.07	57 40.0	2.15	18 34.9	2.08	22.6
30	15 51.7	15 59.0	58 6.2	2.20	58 32.9	2.23	19 24.3	2.04	23.6
31	16 6.3	16 13.4	58 59.7	2.20	59 25.8	2.13	20 13.2	2.04	24.6
32	16 20.2	16 26.5	59 50.9	+2.01	60 14.0	+1.83	21 2.8	2.10	25.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 1.					SATURDAY 3.				
0	7 53 6.82	2.3265	N. 23 21 57.0	8.847	0	9 42 20.06	2.2269	N. 13 49 0.2	14.654
1	7 55 26.35	2.3246	23 13 1.9	8.988	1	9 44 33.63	2.2253	13 34 18.1	14.749
2	7 57 45.77	2.3227	23 3 58.4	9.129	2	9 46 47.10	2.2237	13 19 30.3	14.842
3	8 0 5.07	2.3207	22 54 46.4	9.269	3	9 49 0.48	2.2222	13 4 37.0	14.934
4	8 2 24.25	2.3186	22 45 26.1	9.408	4	9 51 13.77	2.2208	12 49 38.2	15.025
5	8 4 43.30	2.3165	22 35 57.5	9.547	5	9 53 26.98	2.2195	12 34 34.0	15.114
6	8 7 2.23	2.3145	22 26 20.5	9.685	6	9 55 40.11	2.2182	12 19 24.5	15.202
7	8 9 21.04	2.3124	22 16 35.3	9.822	7	9 57 53.16	2.2169	12 4 9.8	15.288
8	8 11 39.72	2.3102	22 6 41.9	9.957	8	10 0 6.13	2.2156	11 48 49.9	15.373
9	8 13 58.27	2.3081	21 56 40.4	10.092	9	10 2 19.03	2.2144	11 33 25.0	15.457
10	8 16 16.69	2.3059	21 46 30.8	10.227	10	10 4 31.86	2.2132	11 17 55.1	15.539
11	8 18 34.98	2.3038	21 36 13.1	10.362	11	10 6 44.62	2.2121	11 2 20.3	15.620
12	8 20 53.14	2.3016	21 25 47.3	10.496	12	10 8 57.31	2.2111	10 46 40.7	15.699
13	8 23 11.17	2.2993	21 15 13.6	10.628	13	10 11 9.95	2.2102	10 30 56.4	15.777
14	8 25 29.06	2.2971	21 4 32.0	10.759	14	10 13 22.53	2.2092	10 15 7.4	15.854
15	8 27 46.82	2.2949	20 53 42.5	10.890	15	10 15 35.05	2.2083	9 59 13.9	15.928
16	8 30 4.45	2.2928	20 42 45.2	11.020	16	10 17 47.52	2.2075	9 43 16.0	16.002
17	8 32 21.95	2.2906	20 31 40.1	11.150	17	10 19 59.95	2.2068	9 27 13.7	16.074
18	8 34 39.31	2.2883	20 20 27.2	11.278	18	10 22 12.34	2.2062	9 11 7.1	16.145
19	8 36 56.54	2.2860	20 9 6.7	11.405	19	10 24 24.69	2.2055	8 54 56.3	16.214
20	8 39 13.63	2.2837	19 57 38.6	11.532	20	10 26 37.00	2.2049	8 38 41.4	16.281
21	8 41 30.59	2.2815	19 46 2.9	11.657	21	10 28 49.28	2.2044	8 22 22.6	16.346
22	8 43 47.41	2.2792	19 34 19.7	11.782	22	10 31 1.53	2.2040	8 5 59.9	16.411
23	8 46 4.10	2.2770	N. 19 22 29.1	11.906	23	10 33 13.76	2.2037	N. 7 49 33.3	16.473
FRIDAY 2.					SUNDAY 4.				
0	8 48 20.65	2.2747	N. 19 10 31.0	12.029	0	10 35 25.97	2.2033	N. 7 33 3.1	16.533
1	8 50 37.07	2.2725	18 58 25.6	12.151	1	10 37 38.16	2.2031	7 16 29.3	16.593
2	8 52 53.35	2.2703	18 46 12.9	12.272	2	10 39 50.34	2.2030	6 59 51.9	16.652
3	8 55 9.50	2.2681	18 33 53.0	12.391	3	10 42 2.52	2.2029	6 43 11.1	16.708
4	8 57 25.52	2.2659	18 21 26.0	12.510	4	10 44 14.69	2.2029	6 26 27.0	16.762
5	8 59 41.41	2.2637	18 8 51.8	12.628	5	10 46 26.87	2.2030	6 9 39.7	16.815
6	9 1 57.17	2.2616	17 56 10.6	12.745	6	10 48 39.05	2.2031	5 52 49.2	16.867
7	9 4 12.80	2.2594	17 43 22.4	12.861	7	10 50 51.24	2.2032	5 35 55.7	16.916
8	9 6 28.30	2.2573	17 30 27.3	12.976	8	10 53 3.44	2.2035	5 18 59.3	16.962
9	9 8 43.67	2.2552	17 17 25.3	13.090	9	10 55 15.66	2.2038	5 2 0.2	17.008
10	9 10 58.92	2.2531	17 4 16.5	13.202	10	10 57 27.90	2.2042	4 44 58.3	17.053
11	9 13 14.04	2.2510	16 51 1.1	13.313	11	10 59 40.17	2.2047	4 27 53.8	17.096
12	9 15 29.04	2.2489	16 37 39.0	13.423	12	11 1 52.46	2.2052	4 10 46.8	17.137
13	9 17 43.91	2.2469	16 24 10.3	13.533	13	11 4 7.9	2.2059	3 53 37.4	17.175
14	9 19 58.67	2.2450	16 10 35.1	13.641	14	11 6 17.16	2.2066	3 36 25.8	17.212
15	9 22 13.31	2.2431	15 56 53.4	13.747	15	11 8 29.58	2.2073	3 19 12.0	17.248
16	9 24 27.84	2.2412	15 43 5.4	13.852	16	11 10 42.04	2.2082	3 1 56.1	17.282
17	9 26 42.25	2.2392	15 29 11.1	13.957	17	11 12 54.56	2.2092	2 44 38.2	17.313
18	9 28 56.54	2.2373	15 15 10.5	14.061	18	11 15 7.14	2.2102	2 27 18.5	17.343
19	9 31 10.72	2.2355	15 1 3.8	14.163	19	11 17 19.78	2.2112	2 9 57.1	17.371
20	9 33 24.80	2.2337	14 46 51.0	14.264	20	11 19 32.49	2.2123	1 52 34.0	17.397
21	9 35 38.77	2.2320	14 32 32.1	14.364	21	11 21 45.26	2.2135	1 35 9.4	17.422
22	9 37 52.64	2.2302	14 18 7.3	14.462	22	11 23 58.11	2.2149	1 17 43.4	17.444
23	9 40 6.40	2.2285	14 3 36.6	14.559	23	11 26 11.05	2.2163	1 0 16.1	17.464
24	9 42 20.06	2.2269	N. 13 49 0.2	14.654	24	11 28 24.07	2.2177	N. 0 42 47.7	17.482

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 5.					WEDNESDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	11 28 24.07	2.2177	N. 0 42 47.7	17.482	0	13 17 58.03	2.3739	S. 12 59 16.1	15.955
1	11 30 37.18	2.2193	0 25 18.2	17.499	1	13 20 20.61	2.3787	13 15 10.9	15.870
2	11 32 50.39	2.2209	N. 0 7 47.8	17.514	2	13 22 43.48	2.3836	13 31 0.5	15.783
3	11 35 3.69	2.2225	S. 0 9 43.5	17.527	3	13 25 6.64	2.3884	13 46 44.9	15.695
4	11 37 17.09	2.2243	0 27 15.5	17.538	4	13 27 30.09	2.3932	14 2 23.9	15.603
5	11 39 30.61	2.2262	0 44 48.1	17.547	5	13 29 53.83	2.3981	14 17 57.3	15.509
6	11 41 44.24	2.2282	1 2 21.2	17.554	6	13 32 17.86	2.4030	14 33 25.0	15.414
7	11 43 57.99	2.2302	1 19 54.6	17.559	7	13 34 42.19	2.4080	14 48 47.0	15.317
8	11 46 11.86	2.2322	1 37 28.3	17.564	8	13 37 6.82	2.4130	15 4 3.0	15.217
9	11 48 25.86	2.2344	1 55 2.1	17.563	9	13 39 31.75	2.4180	15 19 13.0	15.116
10	11 50 39.99	2.2367	2 12 35.9	17.562	10	13 41 56.98	2.4231	15 34 16.9	15.012
11	11 52 54.26	2.2389	2 30 9.5	17.558	11	13 44 22.52	2.4282	15 49 14.4	14.905
12	11 55 8.66	2.2413	2 47 42.9	17.553	12	13 46 48.36	2.4332	16 4 5.5	14.797
13	11 57 23.21	2.2437	3 5 15.9	17.546	13	13 49 14.50	2.4383	16 18 50.0	14.687
14	11 59 37.91	2.2463	3 22 48.4	17.537	14	13 51 40.95	2.4434	16 33 27.9	14.575
15	12 1 52.77	2.2490	3 40 20.4	17.527	15	13 54 7.71	2.4486	16 47 59.0	14.460
16	12 4 7.79	2.2517	3 57 51.6	17.513	16	13 56 34.78	2.4537	17 2 23.1	14.343
17	12 6 22.07	2.2544	4 15 21.9	17.498	17	13 59 2.15	2.4588	17 16 40.2	14.226
18	12 8 38.32	2.2573	4 32 51.3	17.480	18	14 1 29.83	2.4639	17 30 50.2	14.106
19	12 10 53.85	2.2603	4 50 19.5	17.460	19	14 3 57.82	2.4691	17 44 52.9	13.983
20	12 13 9.55	2.2633	5 7 46.5	17.438	20	14 6 26.12	2.4742	17 58 48.1	13.858
21	12 15 25.43	2.2663	5 25 12.1	17.414	21	14 8 54.72	2.4793	18 12 35.8	13.731
22	12 17 41.50	2.2694	5 42 36.2	17.388	22	14 11 23.63	2.4844	18 26 15.8	13.602
23	12 19 57.76	2.2726	S. 5 59 58.7	17.361	23	14 13 52.85	2.4896	S. 18 39 48.1	13.472
TUESDAY 6.					THURSDAY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	12 22 14.21	2.2758	S. 6 17 19.5	17.331	0	14 16 22.38	2.4947	S. 18 53 12.5	13.340
1	12 24 30.86	2.2792	6 34 38.4	17.298	1	14 18 52.21	2.4997	19 6 28.9	13.206
2	12 26 47.72	2.2827	6 51 55.3	17.263	2	14 21 22.34	2.5048	19 19 37.2	13.069
3	12 29 4.79	2.2862	7 9 10.0	17.227	3	14 23 52.78	2.5098	19 32 37.2	12.931
4	12 31 22.07	2.2897	7 26 22.5	17.188	4	14 26 23.52	2.5147	19 45 28.9	12.792
5	12 33 39.56	2.2933	7 43 32.6	17.147	5	14 28 54.56	2.5197	19 58 12.2	12.650
6	12 35 57.27	2.2970	8 0 40.1	17.103	6	14 31 25.89	2.5247	20 10 46.9	12.506
7	12 38 15.20	2.3008	8 17 45.0	17.058	7	14 33 57.52	2.5296	20 23 12.9	12.361
8	12 40 33.37	2.3047	8 34 47.1	17.012	8	14 36 29.44	2.5344	20 35 30.2	12.214
9	12 42 51.77	2.3086	8 51 46.4	16.962	9	14 39 1.65	2.5393	20 47 38.6	12.065
10	12 45 10.40	2.3126	9 8 42.6	16.910	10	14 41 34.15	2.5441	20 59 38.0	11.914
11	12 47 29.28	2.3167	9 25 35.6	16.856	11	14 44 6.94	2.5488	21 11 28.3	11.762
12	12 49 48.40	2.3207	9 42 25.3	16.800	12	14 46 40.01	2.5535	21 23 9.4	11.608
13	12 52 7.76	2.3249	9 59 11.6	16.742	13	14 49 13.36	2.5581	21 34 41.2	11.452
14	12 54 27.38	2.3291	10 15 54.3	16.681	14	14 51 46.98	2.5627	21 46 3.6	11.295
15	12 56 47.25	2.3333	10 32 33.3	16.618	15	14 54 20.88	2.5672	21 57 16.6	11.137
16	12 59 7.37	2.3376	10 49 8.5	16.553	16	14 56 55.05	2.5716	22 8 20.0	10.976
17	13 1 27.76	2.3420	11 5 39.7	16.486	17	14 59 29.48	2.5759	22 19 13.7	10.814
18	13 3 48.41	2.3464	11 22 6.8	16.417	18	15 2 4.16	2.5802	22 29 57.7	10.651
19	13 6 9.33	2.3509	11 38 29.7	16.345	19	15 4 39.10	2.5845	22 40 31.8	10.486
20	13 8 30.52	2.3554	11 54 48.2	16.271	20	15 7 14.30	2.5887	22 50 56.0	10.320
21	13 10 51.98	2.3600	12 11 2.2	16.195	21	15 9 49.75	2.5928	23 1 10.2	10.152
22	13 13 13.72	2.3646	12 27 11.6	16.117	22	15 12 25.44	2.5968	23 11 14.3	9.983
23	13 15 35.74	2.3692	12 43 16.3	16.037	23	15 15 1.37	2.6007	23 21 8.2	9.812
24	13 17 58.03	2.3739	S. 12 59 16.1	15.955	24	15 17 37.52	2.6044	S. 23 30 51.8	9.640

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 9.					SUNDAY 11.				
0	15 17 37.52	2.6044	S. 23 30 51.8	9.640	0	17 24 39.40	2.6322	S. 27 40 11.0	0.626
1	15 20 13.90	2.6081	23 40 25.0	9.468	1	17 27 17.24	2.6290	27 40 42.9	0.438
2	15 22 50.50	2.6118	23 49 47.9	9.294	2	17 29 54.88	2.6257	27 41 3.6	0.252
3	15 25 27.32	2.6154	23 59 0.3	9.118	3	17 32 32.32	2.6223	27 41 13.2	- 0.067
4	15 28 4.35	2.6187	24 8 2.1	8.942	4	17 35 9.55	2.6187	27 41 11.6	+ 0.118
5	15 30 41.57	2.6219	24 16 53.3	8.764	5	17 37 46.56	2.6148	27 40 59.0	0.303
6	15 33 18.98	2.6251	24 25 33.8	8.585	6	17 40 23.33	2.6108	27 40 35.3	0.487
7	15 35 56.58	2.6282	24 34 3.5	8.405	7	17 42 59.86	2.6068	27 40 0.6	0.669
8	15 38 34.37	2.6312	24 42 22.4	8.225	8	17 45 36.15	2.6027	27 39 15.0	0.850
9	15 41 12.33	2.6340	24 50 30.5	8.043	9	17 48 12.19	2.5984	27 38 18.6	1.031
10	15 43 50.45	2.6368	24 58 27.6	7.860	10	17 50 47.96	2.5939	27 37 11.3	1.212
11	15 46 28.74	2.6394	25 6 13.7	7.676	11	17 53 23.46	2.5893	27 35 53.2	1.390
12	15 49 7.18	2.6418	25 13 48.7	7.491	12	17 55 58.68	2.5847	27 34 24.5	1.568
13	15 51 45.76	2.6442	25 21 12.6	7.306	13	17 58 33.62	2.5798	27 32 45.1	1.745
14	15 54 24.48	2.6464	25 28 25.4	7.120	14	18 1 8.26	2.5747	27 30 55.1	1.921
15	15 57 3.33	2.6485	25 35 27.0	6.933	15	18 3 42.59	2.5696	27 28 54.6	2.095
16	15 59 42.30	2.6504	25 42 17.4	6.746	16	18 6 16.61	2.5644	27 26 43.7	2.269
17	16 2 21.38	2.6523	25 48 56.5	6.557	17	18 8 50.32	2.5592	27 24 22.4	2.442
18	16 5 0.57	2.6540	25 55 24.3	6.368	18	18 11 23.71	2.5538	27 21 50.7	2.613
19	16 7 39.86	2.6555	26 1 40.7	6.179	19	18 13 56.77	2.5482	27 19 8.8	2.783
20	16 10 19.23	2.6567	26 7 45.8	5.990	20	18 16 29.49	2.5425	27 16 16.7	2.952
21	16 12 58.67	2.6579	26 13 39.5	5.799	21	18 19 1.87	2.5367	27 13 14.5	3.120
22	16 15 38.18	2.6591	26 19 21.7	5.607	22	18 21 33.90	2.5309	27 10 2.3	3.287
23	16 18 17.76	2.6601	S. 26 24 52.4	5.416	23	18 24 5.58	2.5249	S. 27 6 40.1	3.452
SATURDAY 10.					MONDAY 12.				
0	16 20 57.39	2.6608	S. 26 30 11.6	5.224	0	18 26 36.89	2.5188	S. 27 3 8.0	3.617
1	16 23 37.06	2.6624	26 35 19.3	5.032	1	18 29 7.83	2.5127	26 59 26.1	3.779
2	16 26 16.76	2.6619	26 40 15.5	4.840	2	18 31 38.41	2.5065	26 55 34.5	3.940
3	16 28 56.49	2.6622	26 45 0.1	4.647	3	18 34 8.61	2.5002	26 51 33.3	4.100
4	16 31 36.23	2.6624	26 49 33.2	4.455	4	18 36 38.43	2.4937	26 47 22.5	4.259
5	16 34 15.98	2.6625	26 53 54.7	4.262	5	18 39 7.85	2.4871	26 43 2.2	4.417
6	16 36 55.73	2.6624	26 58 4.7	4.070	6	18 41 36.88	2.4805	26 38 32.5	4.573
7	16 39 35.46	2.6620	27 2 3.1	3.877	7	18 44 5.51	2.4738	26 33 53.5	4.728
8	16 42 15.17	2.6615	27 5 49.9	3.683	8	18 46 33.74	2.4671	26 29 5.2	4.881
9	16 44 54.84	2.6608	27 9 25.1	3.490	9	18 49 1.57	2.4604	26 24 7.8	5.032
10	16 47 34.47	2.6601	27 12 48.7	3.297	10	18 51 28.99	2.4535	26 19 1.3	5.183
11	16 50 14.05	2.6591	27 16 0.7	3.104	11	18 53 55.99	2.4465	26 13 45.8	5.332
12	16 52 53.56	2.6579	27 19 1.2	2.912	12	18 56 22.57	2.4395	26 8 21.5	5.479
13	16 55 33.00	2.6567	27 21 50.1	2.719	13	18 58 48.73	2.4325	26 2 48.4	5.625
14	16 58 12.36	2.6553	27 24 27.5	2.527	14	19 1 14.47	2.4254	25 57 6.5	5.771
15	17 0 51.64	2.6537	27 26 53.3	2.334	15	19 3 39.78	2.4183	25 51 15.9	5.914
16	17 3 30.81	2.6519	27 29 7.6	2.143	16	19 6 4.66	2.4111	25 45 16.8	6.056
17	17 6 9.87	2.6500	27 31 10.5	1.952	17	19 8 29.11	2.4038	25 39 9.2	6.196
18	17 8 48.81	2.6479	27 33 1.9	1.761	18	19 10 53.12	2.3966	25 32 53.3	6.334
19	17 11 27.62	2.6457	27 34 41.8	1.570	19	19 13 16.70	2.3893	25 26 29.1	6.472
20	17 14 6.29	2.6433	27 36 10.3	1.381	20	19 15 39.83	2.3819	25 19 56.7	6.608
21	17 16 44.81	2.6408	27 37 27.5	1.192	21	19 18 2.52	2.3745	25 13 16.1	6.743
22	17 19 23.18	2.6381	27 38 33.3	1.003	22	19 20 24.77	2.3671	25 6 27.5	6.876
23	17 22 1.38	2.6352	27 39 27.8	0.814	23	19 22 46.58	2.3597	24 59 31.0	7.007
24	17 24 39.40	2.6322	S. 27 40 11.0	0.626	24	19 25 7.94	2.3522	S. 24 52 26.6	7.137

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 13.					THURSDAY 15.				
0	19 25 7.94	2.3522	S. 24 52 26.6	7.137	0	21 9 36.44	2.0133	S. 17 7 28.5	11.712
1	19 27 28.85	2.3447	24 45 14.5	7.266	1	21 11 37.06	2.0074	16 55 43.9	11.776
2	19 29 49.31	2.3373	24 37 54.7	7.393	2	21 13 37.33	2.0015	16 43 55.4	11.839
3	19 32 9.33	2.3298	24 30 27.4	7.518	3	21 15 37.24	1.9956	16 32 3.2	11.900
4	19 34 28.89	2.3222	24 22 52.6	7.643	4	21 17 36.80	1.9898	16 20 7.4	11.960
5	19 36 48.00	2.3147	24 15 10.3	7.766	5	21 19 36.02	1.9841	16 8 8.0	12.019
6	19 39 6.66	2.3072	24 7 20.7	7.887	6	21 21 34.90	1.9785	15 56 5.1	12.077
7	19 41 24.87	2.2997	23 59 23.9	8.006	7	21 23 33.44	1.9729	15 43 58.8	12.134
8	19 43 42.62	2.2921	23 51 20.0	8.124	8	21 25 31.65	1.9674	15 31 49.1	12.190
9	19 45 59.92	2.2846	23 43 9.0	8.241	9	21 27 29.53	1.9620	15 19 36.0	12.245
10	19 48 16.77	2.2771	23 34 51.1	8.356	10	21 29 27.09	1.9567	15 7 19.7	12.299
11	19 50 33.17	2.2695	23 26 26.3	8.470	11	21 31 24.33	1.9514	14 55 0.2	12.352
12	19 52 49.11	2.2619	23 17 54.7	8.582	12	21 33 21.25	1.9461	14 42 37.5	12.403
13	19 55 4.60	2.2545	23 9 16.4	8.693	13	21 35 17.86	1.9409	14 30 11.8	12.453
14	19 57 19.65	2.2471	23 0 31.5	8.802	14	21 37 14.16	1.9358	14 17 43.1	12.502
15	19 59 34.25	2.2396	22 51 40.1	8.910	15	21 39 10.16	1.9308	14 5 11.5	12.551
16	20 1 48.40	2.2321	22 42 42.3	9.017	16	21 41 5.86	1.9259	13 52 37.0	12.598
17	20 4 2.10	2.2246	22 33 38.1	9.122	17	21 43 1.27	1.9210	13 39 59.7	12.645
18	20 6 15.35	2.2172	22 24 27.6	9.226	18	21 44 56.38	1.9162	13 27 19.6	12.691
19	20 8 28.16	2.2098	22 15 11.0	9.328	19	21 46 51.21	1.9113	13 14 36.8	12.735
20	20 10 40.53	2.2023	22 5 48.3	9.429	20	21 48 45.76	1.9068	13 1 51.4	12.778
21	20 12 52.46	2.1952	21 56 19.5	9.529	21	21 50 40.02	1.9021	12 49 3.4	12.821
22	20 15 3.95	2.1878	21 46 44.8	9.627	22	21 52 34.01	1.8976	12 36 12.9	12.862
23	20 17 15.00	2.1806	S. 21 37 4.3	9.723	23	21 54 27.74	1.8932	S. 12 23 19.9	12.903
WEDNESDAY 14.					FRIDAY 16.				
0	20 19 25.62	2.1733	S. 21 27 18.1	9.818	0	21 56 21.20	1.8888	S. 12 10 24.5	12.942
1	20 21 35.80	2.1661	21 17 26.2	9.912	1	21 58 14.40	1.8846	11 57 26.8	12.981
2	20 23 45.55	2.1590	21 7 28.7	10.005	2	22 0 7.35	1.8804	11 44 26.8	13.019
3	20 25 54.88	2.1519	20 57 25.6	10.097	3	22 2 0.04	1.8761	11 31 24.5	13.057
4	20 28 3.78	2.1448	20 47 17.1	10.186	4	22 3 52.48	1.8720	11 18 20.0	13.093
5	20 30 12.25	2.1377	20 37 3.3	10.273	5	22 5 44.68	1.8681	11 5 13.4	13.127
6	20 32 20.30	2.1307	20 26 44.3	10.360	6	22 7 36.65	1.8642	10 52 4.8	13.160
7	20 34 27.93	2.1237	20 16 20.1	10.447	7	22 9 28.38	1.8603	10 38 54.2	13.193
8	20 36 35.14	2.1167	20 5 50.7	10.532	8	22 11 19.88	1.8565	10 25 41.6	13.226
9	20 38 41.94	2.1099	19 55 16.3	10.615	9	22 13 11.16	1.8527	10 12 27.0	13.258
10	20 40 48.33	2.1031	19 44 36.9	10.697	10	22 15 2.21	1.8491	9 59 10.6	13.288
11	20 42 54.31	2.0963	19 33 52.7	10.777	11	22 16 53.05	1.8455	9 45 52.4	13.317
12	20 44 59.89	2.0896	19 23 3.7	10.857	12	22 18 43.67	1.8419	9 32 32.5	13.346
13	20 47 5.06	2.0829	19 12 9.9	10.935	13	22 20 34.08	1.8385	9 19 10.9	13.374
14	20 49 9.84	2.0763	19 1 11.5	11.011	14	22 22 24.29	1.8352	9 5 47.6	13.402
15	20 51 14.22	2.0697	18 50 8.6	11.086	15	22 24 14.31	1.8320	8 52 22.7	13.428
16	20 53 18.21	2.0632	18 39 1.2	11.161	16	22 26 4.13	1.8288	8 38 56.2	13.453
17	20 55 21.81	2.0568	18 27 49.3	11.234	17	22 27 53.76	1.8257	8 25 28.3	13.478
18	20 57 25.03	2.0504	18 16 33.1	11.306	18	22 29 43.21	1.8227	8 11 58.9	13.502
19	20 59 27.86	2.0441	18 5 12.6	11.377	19	22 31 32.48	1.8197	7 58 28.1	13.524
20	21 1 30.32	2.0378	17 53 47.9	11.446	20	22 33 21.57	1.8167	7 44 56.0	13.546
21	21 3 32.40	2.0316	17 42 19.1	11.514	21	22 35 10.48	1.8138	7 31 22.6	13.567
22	21 5 34.11	2.0255	17 30 46.2	11.582	22	22 36 59.22	1.8110	7 17 47.9	13.587
23	21 7 35.46	2.0194	17 19 9.3	11.647	23	22 38 47.80	1.8084	7 4 12.1	13.607
24	21 9 36.44	2.0133	S. 17 7 28.5	11.712	24	22 40 36.23	1.8058	S. 6 50 35.1	13.626

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 17.					MONDAY 19.				
0	22 40 36.23	1.8058	S. 6 50 35.1	13.626	0	0 5 36.38	1.7626	N. 4 10 30.0	13.632
1	22 42 24.50	1.8032	6 36 57.0	13.644	1	0 7 22.16	1.7633	4 24 7.4	13.615
2	22 44 12.62	1.8007	6 23 17.8	13.662	2	0 9 7.98	1.7641	4 37 43.8	13.597
3	22 46 0.59	1.7983	6 9 37.6	13.678	3	0 10 53.85	1.7650	4 51 19.1	13.578
4	22 47 48.42	1.7960	5 55 56.4	13.693	4	0 12 39.78	1.7659	5 4 53.2	13.557
5	22 49 36.11	1.7937	5 42 14.4	13.708	5	0 14 25.76	1.7668	5 18 26.0	13.536
6	22 51 23.66	1.7914	5 28 31.5	13.722	6	0 16 11.80	1.7679	5 31 57.5	13.514
7	22 53 11.08	1.7893	5 14 47.8	13.735	7	0 17 57.91	1.7691	5 45 27.7	13.492
8	22 54 58.38	1.7874	5 1 3.3	13.748	8	0 19 44.09	1.7703	5 58 56.5	13.469
9	22 56 45.57	1.7855	4 47 18.0	13.760	9	0 21 30.34	1.7715	6 12 24.0	13.446
10	22 58 32.64	1.7835	4 33 32.1	13.770	10	0 23 16.67	1.7728	6 25 50.0	13.421
11	23 0 19.59	1.7816	4 19 45.6	13.781	11	0 25 3.08	1.7742	6 39 14.5	13.395
12	23 2 6.43	1.7798	4 5 58.4	13.791	12	0 26 49.58	1.7757	6 52 37.4	13.369
13	23 3 53.17	1.7782	3 52 10.7	13.799	13	0 28 36.16	1.7772	7 5 58.8	13.342
14	23 5 39.81	1.7766	3 38 22.6	13.806	14	0 30 22.84	1.7787	7 19 18.5	13.314
15	23 7 26.36	1.7751	3 24 34.0	13.813	15	0 32 9.61	1.7803	7 32 36.5	13.286
16	23 9 12.82	1.7736	3 10 45.0	13.819	16	0 33 56.48	1.7820	7 45 52.8	13.257
17	23 10 59.19	1.7721	2 56 55.7	13.825	17	0 35 43.45	1.7838	7 59 7.3	13.227
18	23 12 45.47	1.7708	2 43 6.0	13.831	18	0 37 30.53	1.7856	8 12 20.1	13.197
19	23 14 31.68	1.7696	2 29 16.0	13.834	19	0 39 17.72	1.7874	8 25 31.0	13.166
20	23 16 17.82	1.7684	2 15 25.9	13.837	20	0 41 5.02	1.7893	8 38 40.0	13.133
21	23 18 3.88	1.7672	2 1 35.6	13.840	21	0 42 52.44	1.7913	8 51 47.0	13.100
22	23 19 49.88	1.7662	1 47 45.1	13.842	22	0 44 39.98	1.7934	9 4 52.0	13.067
23	23 21 35.82	1.7652	S. 1 33 54.5	13.843	23	0 46 27.65	1.7955	N. 9 17 55.0	13.032
SUNDAY 18.					TUESDAY 20.				
0	23 23 21.71	1.7643	S. 1 20 3.9	13.843	0	0 48 15.44	1.7976	N. 9 30 55.9	12.997
1	23 25 7.54	1.7634	1 6 13.3	13.843	1	0 50 3.36	1.7998	9 43 54.6	12.961
2	23 26 53.32	1.7627	0 52 22.8	13.842	2	0 51 51.42	1.8021	9 56 51.2	12.925
3	23 28 39.06	1.7620	0 38 32.3	13.841	3	0 53 39.61	1.8043	10 9 45.6	12.887
4	23 30 24.76	1.7613	0 24 41.9	13.838	4	0 55 27.94	1.8067	10 22 37.7	12.848
5	23 32 10.42	1.7607	S. 0 10 51.7	13.834	5	0 57 16.42	1.8092	10 35 27.4	12.808
6	23 33 56.04	1.7602	N. 0 2 58.2	13.830	6	0 59 5.05	1.8117	10 48 14.7	12.768
7	23 35 41.64	1.7598	0 16 47.9	13.826	7	1 0 53.83	1.8142	11 0 59.6	12.728
8	23 37 27.22	1.7594	0 30 37.3	13.820	8	1 2 42.76	1.8168	11 13 42.0	12.687
9	23 39 12.77	1.7591	0 44 26.3	13.814	9	1 4 31.85	1.8195	11 26 22.0	12.645
10	23 40 58.31	1.7589	0 58 15.0	13.807	10	1 6 21.10	1.8222	11 38 59.4	12.601
11	23 42 43.84	1.7587	1 12 3.2	13.799	11	1 8 10.52	1.8250	11 51 34.1	12.557
12	23 44 29.35	1.7585	1 25 50.9	13.791	12	1 10 0.10	1.8278	12 4 6.2	12.512
13	23 46 14.86	1.7586	1 39 38.1	13.782	13	1 11 49.86	1.8307	12 16 35.6	12.467
14	23 48 0.38	1.7587	1 53 24.7	13.772	14	1 13 39.79	1.8336	12 29 2.2	12.420
15	23 49 45.90	1.7587	2 7 10.8	13.762	15	1 15 29.89	1.8365	12 41 26.0	12.373
16	23 51 31.42	1.7589	2 20 56.2	13.750	16	1 17 20.17	1.8396	12 53 47.0	12.325
17	23 53 16.96	1.7591	2 34 40.8	13.737	17	1 19 10.64	1.8427	13 6 5.0	12.276
18	23 55 2.51	1.7593	2 48 24.7	13.725	18	1 21 1.29	1.8458	13 18 20.1	12.227
19	23 56 48.08	1.7597	3 2 7.8	13.712	19	1 22 52.13	1.8489	13 30 32.2	12.176
20	23 58 33.68	1.7601	3 15 50.1	13.697	20	1 24 43.16	1.8521	13 42 41.2	12.124
21	0 0 19.30	1.7606	3 29 31.5	13.682	21	1 26 34.39	1.8554	13 54 47.1	12.072
22	0 2 4.95	1.7612	3 43 12.0	13.667	22	1 28 25.81	1.8588	14 6 49.9	12.019
23	0 3 50.64	1.7619	3 56 51.5	13.650	23	1 30 17.44	1.8622	14 18 49.4	11.965
24	0 5 36.38	1.7626	N. 4 10 30.0	13.632	24	1 32 9.27	1.8656	N. 14 30 45.7	11.911

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 21.					FRIDAY 23.				
0	1 32 9.27	1.8656	N.14 30 45.7	11.911	0	3 6 20.80	2.0693	N.22 42 45.5	8.243
1	1 34 1.31	1.8691	14 42 38.7	11.855	1	3 8 25.10	2.0740	22 50 57.1	8.144
2	1 35 53.56	1.8725	14 54 28.3	11.798	2	3 10 29.68	2.0787	22 59 2.8	8.046
3	1 37 46.01	1.8760	15 6 14.5	11.741	3	3 12 34.54	2.0833	23 7 2.6	7.946
4	1 39 38.68	1.8796	15 17 57.3	11.683	4	3 14 39.68	2.0880	23 14 56.3	7.844
5	1 41 31.57	1.8832	15 29 36.5	11.625	5	3 16 45.10	2.0926	23 22 43.9	7.742
6	1 43 24.67	1.8869	15 41 12.1	11.568	6	3 18 50.79	2.0972	23 30 25.3	7.638
7	1 45 18.00	1.8907	15 52 44.1	11.503	7	3 20 56.77	2.1019	23 38 0.5	7.534
8	1 47 11.56	1.8945	16 4 12.5	11.442	8	3 23 3.02	2.1065	23 45 29.4	7.429
9	1 49 5.34	1.8983	16 15 37.2	11.380	9	3 25 9.55	2.1112	23 52 52.0	7.323
10	1 50 59.35	1.9021	16 26 58.1	11.316	10	3 27 16.36	2.1158	24 0 8.2	7.217
11	1 52 53.59	1.9060	16 38 15.1	11.252	11	3 29 23.44	2.1205	24 7 18.0	7.109
12	1 54 48.07	1.9100	16 49 28.3	11.187	12	3 31 30.80	2.1249	24 14 21.3	7.000
13	1 56 42.79	1.9139	17 0 37.6	11.121	13	3 33 38.43	2.1294	24 21 18.0	6.891
14	1 58 37.74	1.9179	17 11 42.8	11.054	14	3 35 46.33	2.1340	24 28 8.2	6.782
15	2 0 32.93	1.9219	17 22 44.0	10.986	15	3 37 54.51	2.1386	24 34 51.8	6.671
16	2 2 28.37	1.9260	17 33 41.1	10.917	16	3 40 2.96	2.1430	24 41 28.7	6.559
17	2 4 24.05	1.9301	17 44 34.1	10.848	17	3 42 11.67	2.1474	24 47 58.8	6.446
18	2 6 19.98	1.9342	17 55 22.9	10.778	18	3 44 20.64	2.1518	24 54 22.2	6.332
19	2 8 16.16	1.9384	18 6 7.4	10.707	19	3 46 29.88	2.1562	25 0 38.7	6.217
20	2 10 12.59	1.9426	18 16 47.7	10.635	20	3 48 39.38	2.1606	25 6 48.3	6.102
21	2 12 9.27	1.9468	18 27 23.6	10.561	21	3 50 49.15	2.1650	25 12 51.0	5.987
22	2 14 6.21	1.9511	18 37 55.0	10.487	22	3 52 59.18	2.1693	25 18 46.7	5.869
23	2 16 3.41	1.9554	N.18 48 22.0	10.412	23	3 55 9.46	2.1735	N.25 24 35.3	5.751
THURSDAY 22.					SATURDAY 24.				
0	2 18 0.86	1.9597	N.18 58 44.5	10.337	0	3 57 20.00	2.1777	N.25 30 16.8	5.632
1	2 19 58.57	1.9641	19 9 2.4	10.260	1	3 59 30.79	2.1819	25 35 51.2	5.513
2	2 21 56.55	1.9685	19 19 15.7	10.182	2	4 1 41.83	2.1861	25 41 18.4	5.393
3	2 23 54.79	1.9729	19 29 24.3	10.103	3	4 3 53.12	2.1902	25 46 38.4	5.273
4	2 25 53.30	1.9773	19 39 28.1	10.024	4	4 6 4.66	2.1943	25 51 51.2	5.151
5	2 27 52.07	1.9817	19 49 27.2	9.944	5	4 8 16.44	2.1983	25 56 56.6	5.028
6	2 29 51.11	1.9862	19 59 21.4	9.865	6	4 10 28.46	2.2023	26 1 54.6	4.905
7	2 31 50.42	1.9907	20 9 10.7	9.781	7	4 12 40.72	2.2063	26 6 45.2	4.782
8	2 33 50.00	1.9952	20 18 55.1	9.698	8	4 14 53.21	2.2102	26 11 28.4	4.658
9	2 35 49.85	1.9997	20 28 34.4	9.613	9	4 17 5.94	2.2141	26 16 4.1	4.532
10	2 37 49.97	2.0043	20 38 8.6	9.528	10	4 19 18.90	2.2179	26 20 32.2	4.405
11	2 39 50.37	2.0089	20 47 37.7	9.443	11	4 21 32.08	2.2216	26 24 52.7	4.279
12	2 41 51.04	2.0135	20 57 1.7	9.357	12	4 23 45.49	2.2253	26 29 5.7	4.152
13	2 43 51.99	2.0181	21 6 20.5	9.268	13	4 25 59.12	2.2289	26 33 11.0	4.023
14	2 45 53.21	2.0227	21 15 33.9	9.179	14	4 28 12.96	2.2324	26 37 8.5	3.894
15	2 47 54.71	2.0273	21 24 42.0	9.090	15	4 30 27.01	2.2359	26 40 58.3	3.765
16	2 49 56.49	2.0320	21 33 44.7	9.000	16	4 32 41.27	2.2394	26 44 40.3	3.634
17	2 51 58.55	2.0367	21 42 42.0	8.908	17	4 34 55.74	2.2429	26 48 14.4	3.503
18	2 54 0.89	2.0413	21 51 33.7	8.816	18	4 37 10.42	2.2462	26 51 40.7	3.372
19	2 56 3.51	2.0460	22 0 19.9	8.723	19	4 39 25.29	2.2494	26 54 59.1	3.240
20	2 58 6.41	2.0506	22 9 0.5	8.629	20	4 41 40.35	2.2527	26 58 9.5	3.107
21	3 0 9.58	2.0553	22 17 35.4	8.534	21	4 43 55.61	2.2559	27 1 11.9	2.973
22	3 2 13.04	2.0600	22 26 4.6	8.438	22	4 46 11.06	2.2589	27 4 6.3	2.839
23	3 4 16.78	2.0647	22 34 28.0	8.341	23	4 48 26.68	2.2618	27 6 52.6	2.705
24	3 6 20.80	2.0693	N.22 42 45.5	8.243	24	4 50 42.48	2.2647	N.27 9 30.9	2.570

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 25.					TUESDAY 27.				
0	4 50 42.48	2.2647	N.27 9 30.9	2.570	0	6 41 20.40	2.3198	N.26 30 8.4	4.276
1	4 52 58.45	2.2677	27 12 1.0	2.434	1	6 43 39.20	2.3129	26 25 47.4	4.423
2	4 55 14.60	2.2706	27 14 23.0	2.298	2	6 45 57.95	2.3120	26 21 17.7	4.567
3	4 57 30.92	2.2733	27 16 36.8	2.162	3	6 48 16.64	2.3110	26 16 39.4	4.710
4	4 59 47.40	2.2759	27 18 42.4	2.024	4	6 50 35.27	2.3099	26 11 52.5	4.853
5	5 2 4.03	2.2785	27 20 39.7	1.887	5	6 52 53.83	2.3087	26 6 57.0	4.996
6	5 4 20.82	2.2811	27 22 28.8	1.749	6	6 55 12.31	2.3074	26 1 53.0	5.138
7	5 6 37.76	2.2835	27 24 9.6	1.610	7	6 57 30.71	2.3061	25 56 40.5	5.280
8	5 8 54.84	2.2858	27 25 42.0	1.471	8	6 59 49.04	2.3048	25 51 19.4	5.422
9	5 11 12.06	2.2881	27 27 6.1	1.332	9	7 2 7.29	2.3034	25 45 49.8	5.563
10	5 13 29.41	2.2903	27 28 21.8	1.192	10	7 4 25.45	2.3019	25 40 11.8	5.704
11	5 15 46.89	2.2924	27 29 29.1	1.051	11	7 6 43.52	2.3004	25 34 25.3	5.846
12	5 18 4.50	2.2945	27 30 27.9	0.910	12	7 9 1.50	2.2988	25 28 30.3	5.987
13	5 20 22.23	2.2964	27 31 18.3	0.769	13	7 11 19.38	2.2972	25 22 26.9	6.126
14	5 22 40.07	2.2983	27 32 0.2	0.628	14	7 13 37.16	2.2955	25 16 15.2	6.265
15	5 24 58.03	2.2999	27 32 33.6	0.486	15	7 15 54.84	2.2937	25 9 55.1	6.404
16	5 27 16.09	2.3018	27 32 58.5	0.343	16	7 18 12.41	2.2919	25 3 26.7	6.543
17	5 29 34.25	2.3035	27 33 14.8	0.201	17	7 20 29.87	2.2901	24 56 50.0	6.682
18	5 31 52.51	2.3051	27 33 22.6	+ 0.058	18	7 22 47.22	2.2882	24 50 4.9	6.820
19	5 34 10.86	2.3065	27 33 21.8	- 0.085	19	7 25 4.45	2.2863	24 43 11.6	6.957
20	5 36 29.29	2.3079	27 33 12.4	0.228	20	7 27 21.57	2.2843	24 36 10.1	7.093
21	5 38 47.81	2.3093	27 32 54.5	0.571	21	7 29 38.57	2.2823	24 29 0.4	7.230
22	5 41 6.41	2.3105	27 32 27.9	0.515	22	7 31 55.45	2.2803	24 21 42.5	7.366
23	5 43 25.07	2.3116	N.27 31 52.7	0.659	23	7 34 12.20	2.2782	N.24 14 16.5	7.501
MONDAY 26.					WEDNESDAY 28.				
0	5 45 43.80	2.3127	N.27 31 8.8	0.803	0	7 36 28.83	2.2762	N.24 6 42.4	7.636
1	5 48 2.59	2.3137	27 30 16.3	0.947	1	7 38 45.33	2.2739	23 59 0.2	7.770
2	5 50 21.44	2.3146	27 29 15.1	1.092	2	7 41 1.70	2.2717	23 51 10.0	7.903
3	5 52 40.34	2.3154	27 28 5.2	1.237	3	7 43 17.93	2.2694	23 43 11.8	8.036
4	5 54 59.29	2.3162	27 26 46.6	1.382	4	7 45 34.03	2.2672	23 35 5.6	8.169
5	5 57 18.28	2.3168	27 25 19.4	1.526	5	7 47 49.99	2.2649	23 26 51.5	8.302
6	5 59 37.30	2.3173	27 23 43.5	1.671	6	7 50 5.82	2.2627	23 18 29.4	8.433
7	6 1 56.35	2.3178	27 21 58.9	1.817	7	7 52 21.51	2.2605	23 9 59.5	8.563
8	6 4 15.43	2.3183	27 20 5.5	1.962	8	7 54 37.06	2.2579	23 1 21.8	8.694
9	6 6 34.54	2.3186	27 18 3.5	2.106	9	7 56 52.46	2.2555	22 52 36.2	8.824
10	6 8 53.66	2.3187	27 15 52.8	2.252	10	7 59 7.72	2.2532	22 43 42.9	8.952
11	6 11 12.79	2.3188	27 13 33.3	2.397	11	8 1 22.84	2.2508	22 34 42.0	9.079
12	6 13 31.92	2.3189	27 11 5.1	2.542	12	8 3 37.82	2.2484	22 25 33.4	9.206
13	6 15 51.06	2.3189	27 8 28.2	2.687	13	8 5 52.65	2.2459	22 16 17.2	9.333
14	6 18 10.19	2.3188	27 5 42.6	2.832	14	8 8 7.33	2.2434	22 6 53.4	9.460
15	6 20 29.32	2.3187	27 2 48.3	2.977	15	8 10 21.86	2.2409	21 57 22.0	9.586
16	6 22 48.44	2.3185	26 59 45.3	3.122	16	8 12 36.24	2.2385	21 47 43.1	9.710
17	6 25 7.54	2.3182	26 56 33.6	3.268	17	8 14 50.48	2.2361	21 37 56.8	9.834
18	6 27 26.62	2.3178	26 53 13.1	3.413	18	8 17 4.57	2.2336	21 28 3.0	9.957
19	6 29 45.68	2.3173	26 49 44.0	3.557	19	8 19 18.51	2.2311	21 18 1.9	10.079
20	6 32 4.70	2.3168	26 46 6.2	3.702	20	8 21 32.30	2.2286	21 7 53.5	10.202
21	6 34 23.69	2.3162	26 42 19.7	3.847	21	8 23 45.94	2.2262	20 57 37.7	10.323
22	6 36 42.64	2.3154	26 38 24.6	3.991	22	8 25 59.44	2.2237	20 47 14.7	10.443
23	6 39 1.54	2.3146	26 34 20.8	4.135	23	8 28 12.78	2.2211	20 36 44.5	10.562
24	6 41 20.40	2.3138	N.26 30 8.4	4.278	24	8 30 25.97	2.2186	N.20 26 7.2	10.681

GREENWICH MEAN TIME.									
THE MOON'S RIGHT ASCENSION AND DECLINATION.									
Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 29.					SATURDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	8 30 25.97	2.2186	N. 20 26 7.2	10.681	1	10 14 32.58	2.1352	N. 9 53 43.6	15.286
2	8 32 39.01	2.2162	20 15 22.8	10.799	2	10 16 40.68	2.1347	9 38 24.3	15.356
3	8 34 51.91	2.2137	20 4 31.4	10.916	3	10 18 48.75	2.1343	9 23 0.9	15.433
4	8 37 4.66	2.2113	19 53 32.9	11.033	4	10 20 56.79	2.1339	9 7 33.5	15.499
5	8 39 17.27	2.2089	19 42 27.5	11.148	5	10 23 4.82	2.1335	8 52 2.1	15.557
6	8 41 29.73	2.2064	19 31 15.2	11.263	6	10 25 12.83	2.1334	8 36 26.7	15.622
7	8 43 42.04	2.2040	19 19 56.0	11.377	7	10 27 20.83	2.1332	8 20 47.5	15.684
8	8 45 54.21	2.2016	19 8 30.0	11.489	8	10 29 28.82	2.1332	8 5 4.6	15.746
9	8 48 6.24	2.1992	18 56 57.3	11.601	9	10 31 36.82	2.1333	7 49 17.9	15.808
10	8 50 18.12	2.1968	18 45 17.9	11.712	10	10 33 44.82	2.1333	7 33 27.6	15.868
11	8 52 29.86	2.1945	18 33 31.9	11.822	11	10 35 52.82	2.1335	7 17 33.8	15.926
12	8 54 41.46	2.1922	18 21 39.2	11.932	12	10 38 0.84	2.1337	7 1 36.5	15.983
13	8 56 52.93	2.1900	18 9 40.0	12.041	13	10 40 8.87	2.1340	6 45 35.8	16.039
14	8 59 4.26	2.1877	17 57 34.3	12.148	14	10 42 16.92	2.1344	6 29 31.8	16.093
15	9 1 15.46	2.1855	17 45 22.2	12.254	15	10 44 25.00	2.1349	6 13 24.6	16.146
16	9 3 26.52	2.1833	17 33 3.8	12.360	16	10 46 33.11	2.1354	5 57 14.3	16.197
17	9 5 37.45	2.1811	17 20 39.0	12.466	17	10 48 41.25	2.1361	5 41 0.9	16.247
18	9 7 48.25	2.1789	17 8 7.9	12.569	18	10 50 49.44	2.1368	5 24 44.6	16.296
19	9 9 58.92	2.1767	16 55 30.7	12.672	19	10 52 57.67	2.1376	5 8 25.4	16.343
20	9 12 9.47	2.1747	16 42 47.3	12.774	20	10 55 5.95	2.1384	4 52 3.4	16.389
21	9 14 19.89	2.1727	16 29 57.8	12.876	21	10 57 14.28	2.1393	4 35 38.7	16.434
22	9 16 30.19	2.1707	16 17 2.2	12.976	22	10 59 22.67	2.1403	4 19 11.3	16.477
23	9 18 40.38	2.1688	16 4 0.7	13.075	23	11 1 31.12	2.1414	4 2 41.4	16.518
24	9 20 50.45	2.1668	N. 15 50 53.2	13.173	24	11 3 39.64	2.1427	N. 3 46 9.1	16.558
FRIDAY 30.					SUNDAY, NOVEMBER 1.				
0	9 23 0.40	2.1649	N. 15 37 39.9	13.270	0	11 5 48.24	2.1440	N. 3 29 34.4	16.597
1	9 25 10.24	2.1631	15 24 20.8	13.366	PHASES OF THE MOON.				
2	9 27 19.97	2.1613	15 10 56.0	13.462					
3	9 29 29.60	2.1596	14 57 25.4	13.557					
4	9 31 39.12	2.1578	14 43 49.2	13.649					
5	9 33 48.54	2.1563	14 30 7.5	13.741	● New Moon Oct. 6 10 18.2				
6	9 35 57.87	2.1547	14 16 20.3	13.832					
7	9 38 7.10	2.1531	14 2 27.6	13.922					
8	9 40 16.24	2.1515	13 48 29.6	14.011					
9	9 42 25.28	2.1499	13 34 26.3	14.099	☾ First Quarter 13 2 47.4				
10	9 44 34.23	2.1486	13 20 17.7	14.187					
11	9 46 43.11	2.1473	13 6 3.9	14.273					
12	9 48 51.91	2.1460	12 51 45.0	14.357					
13	9 51 0.63	2.1448	12 37 21.1	14.440	○ Full Moon 21 4 17.4				
14	9 53 9.28	2.1436	12 22 52.2	14.523					
15	9 55 17.86	2.1424	12 8 18.3	14.605					
16	9 57 26.37	2.1413	11 53 39.6	14.685					
17	9 59 34.82	2.1404	11 38 56.1	14.764	☾ Last Quarter 29 3 20.6				
18	10 1 43.22	2.1395	11 24 7.9	14.842					
19	10 3 51.56	2.1386	11 9 15.0	14.919	☾ Perigee Oct. 6 17.1				
20	10 5 59.85	2.1377	10 54 17.6	14.994					
21	10 8 8.09	2.1370	10 39 15.7	15.069					
22	10 10 16.29	2.1363	10 24 9.3	15.142					
23	10 12 24.45	2.1357	10 8 58.6	15.214	☾ Apogee 20 18.0				
24	10 14 32.58	2.1352	N. 9 53 43.6	15.286					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Arietis W.	79 19 16	2574	80 58 47	2555	82 38 44	2536	84 19 7	2518
	Aldebaran W.	48 2 50	2687	49 39 48	2662	51 17 19	2638	52 55 23	2613
	MARS W.	32 44 40	2729	34 20 42	2705	35 57 15	2682	37 34 19	2659
	SUN E.	73 0 24	2900	71 28 5	2880	69 55 21	2861	68 22 12	2842
2	α Arietis W.	92 47 34	2424	94 30 35	2405	96 14 3	2386	97 57 58	2367
	Aldebaran W.	61 13 42	2500	62 54 55	2478	64 36 39	2457	66 18 53	2436
	MARS W.	45 47 18	2548	47 27 24	2527	49 7 59	2506	50 49 4	2485
	SUN E.	60 30 1	2741	58 54 16	2722	57 18 5	2702	55 41 28	2683
3	Aldebaran W.	74 57 20	2336	76 42 27	2317	78 28 1	2299	80 14 2	2281
	MARS W.	59 21 43	2384	61 5 40	2366	62 50 4	2346	64 34 56	2328
	Pollux W.	32 3 46	2294	33 49 55	2273	35 36 34	2253	37 23 42	2234
	SUN E.	47 31 56	2589	45 52 46	2572	44 13 12	2554	42 33 14	2537
4	Aldebaran W.	89 10 26	2200	90 58 54	2185	92 47 44	2172	94 36 54	2159
	MARS W.	73 25 43	2243	75 13 6	2227	77 0 53	2212	78 49 2	2198
	Pollux W.	46 26 17	2147	48 16 5	2131	50 6 17	2116	51 56 52	2102
	SUN E.	34 7 51	2464	32 25 47	2452	30 43 26	2440	29 0 48	2431
8	SUN W.	22 56 55	2365	24 41 20	2367	26 25 42	2371	28 9 58	2376
	α Aquilæ E.	85 37 46	2691	84 0 54	2704	82 24 20	2720	80 48 7	2738
	Fomalhaut E.	110 33 1	2376	108 48 52	2376	107 4 43	2378	105 20 37	2382
9	SUN W.	36 48 43	2424	38 31 44	2436	40 14 27	2450	41 56 51	2464
	α Aquilæ E.	72 53 40	2856	71 20 25	2887	69 47 49	2920	68 15 55	2954
	Fomalhaut E.	96 42 13	2423	94 59 11	2434	93 16 25	2447	91 33 57	2461
10	SUN W.	50 23 39	2543	52 3 53	2559	53 43 44	2577	55 23 11	2595
	VENUS W.	25 52 21	2688	27 29 17	2698	29 6 0	2709	30 42 28	2722
	α Aquilæ E.	60 48 28	3172	59 21 45	3225	57 56 6	3282	56 31 33	3343
	Fomalhaut E.	83 7 1	2545	81 26 51	2566	79 47 9	2586	78 7 55	2607
11	SUN W.	63 34 14	2687	65 11 11	2706	66 47 43	2725	68 23 50	2744
	VENUS W.	38 40 11	2797	40 14 43	2815	41 48 52	2832	43 22 38	2849
	SATURN W.	34 49 56	2487	36 31 27	2498	38 12 43	2510	39 53 43	2521
	Fomalhaut E.	69 59 28	2729	68 23 27	2756	66 48 1	2784	65 13 12	2814
	α Pegasi E.	91 23 1	2544	89 42 49	2561	88 3 1	2580	86 23 39	2599
12	SUN W.	76 18 4	2839	77 51 41	2859	79 24 53	2877	80 57 41	2896
	VENUS W.	51 5 46	2939	52 37 15	2958	54 8 21	2976	55 39 4	2994
	SATURN W.	48 14 15	2591	49 53 23	2605	51 32 11	2621	53 10 38	2635
	Fomalhaut E.	57 29 4	2977	55 58 22	3014	54 28 27	3052	52 59 19	3094
	α Pegasi E.	78 13 17	2696	76 36 32	2717	75 0 15	2738	73 24 25	2758
13	SUN W.	88 35 50	2986	90 6 20	3004	91 36 28	3021	93 6 15	3038
	VENUS W.	63 7 3	3082	64 35 34	3100	66 3 44	3117	67 31 33	3133
	SATURN W.	61 17 46	2712	62 54 10	2726	64 30 15	2741	66 6 0	2756
	Antares W.	40 52 37	2631	42 30 50	2648	44 8 40	2663	45 46 9	2679
	Fomalhaut E.	45 46 59	3336	44 23 29	3394	43 1 6	3458	41 39 55	3523
	α Pegasi E.	65 32 12	2866	63 59 10	2890	62 26 38	2912	60 54 35	2936
	α Arietis E.	107 12 13	2649	105 34 25	2666	103 56 59	2681	102 19 54	2696

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	♈ Arietis	W.	85 59 55	2499	87 41 10	2480	89 22 51	2461	91 4 59	2442
	Aldebaran	W.	54 34 0	2591	56 13 8	2567	57 52 48	2545	59 32 59	2522
	MARS	W.	39 11 54	2636	40 50 0	2614	42 28 36	2592	44 7 42	2570
	SUN	E.	66 48 38	2821	65 14 38	2801	63 40 12	2782	62 5 20	2761
2	♈ Arietis	W.	99 42 20	2349	101 27 8	2331	103 12 23	2313	104 58 4	2295
	Aldebaran	W.	68 1 36	2415	69 44 49	2395	71 28 31	2375	73 12 41	2355
	MARS	W.	52 30 38	2465	54 12 41	2444	55 55 13	2424	57 38 14	2404
	SUN	E.	54 4 25	2663	52 26 56	2644	50 49 1	2626	49 10 41	2607
3	Aldebaran	W.	82 0 29	2264	83 47 22	2247	85 34 39	2231	87 22 21	2215
	MARS	W.	66 20 14	2311	68 5 58	2293	69 52 8	2276	71 38 43	2259
	Pollux	W.	39 11 19	2225	40 59 24	2197	42 47 56	2180	44 36 54	2163
	SUN	E.	40 52 52	2521	39 12 8	2506	37 31 3	2491	35 49 37	2477
4	Aldebaran	W.	96 26 24	2146	98 16 13	2135	100 6 19	2124	101 56 42	2114
	MARS	W.	80 37 33	2124	82 26 24	2171	84 15 35	2159	86 5 5	2147
	Pollux	W.	53 47 48	2068	55 39 5	2075	57 30 43	2062	59 22 40	2052
	SUN	E.	27 17 57	2424	25 34 56	2417	23 51 46	2414	22 8 31	2412
8	SUN	W.	29 54 7	2393	31 38 5	2391	33 21 52	2401	35 5 25	2412
	♏ Aquilæ	E.	79 12 17	2757	77 36 53	2779	76 1 57	2802	74 27 32	2828
	Fomalhaut	E.	103 36 37	2388	101 52 45	2394	100 9 2	2403	98 25 31	2412
9	SUN	W.	43 38 55	2478	45 20 39	2494	47 2 1	2510	48 43 1	2525
	♏ Aquilæ	E.	66 44 45	2992	65 14 22	3023	63 44 50	3076	62 16 11	3122
	Fomalhaut	E.	89 51 49	2476	88 10 2	2492	86 28 38	2509	84 47 37	2527
10	SUN	W.	57 2 13	2612	58 40 51	2631	60 19 4	2649	61 56 52	2669
	VENUS	W.	32 18 38	2736	33 54 30	2750	35 30 4	2765	37 5 18	2781
	♏ Aquilæ	E.	55 8 11	3408	53 46 3	3479	52 25 15	3554	51 5 50	3635
	Fomalhaut	E.	76 29 10	2630	74 50 56	2654	73 13 14	2678	71 36 4	2703
11	SUN	W.	69 59 31	2764	71 34 46	2782	73 9 37	2801	74 44 3	2821
	VENUS	W.	44 56 2	2868	46 29 2	2885	48 1 40	2904	49 33 54	2921
	SATURN	W.	41 34 27	2534	43 14 53	2548	44 55 0	2562	46 34 47	2576
	Fomalhaut	E.	63 39 2	2844	62 5 31	2875	60 32 40	2907	59 0 30	2942
	♏ Pegasi	E.	84 44 42	2618	83 6 11	2638	81 28 7	2657	79 50 29	2676
12	SUN	W.	82 30 5	2914	84 2 6	2933	85 33 43	2950	87 4 58	2969
	VENUS	W.	57 9 24	3012	58 39 22	3030	60 8 57	3047	61 38 11	3065
	SATURN	W.	54 48 45	2651	56 26 31	2666	58 3 56	2681	59 41 1	2696
	Fomalhaut	E.	51 31 2	3137	50 3 37	3182	48 37 6	3230	47 11 32	3282
	♏ Pegasi	E.	71 49 2	2780	70 14 8	2801	68 39 41	2822	67 5 42	2845
13	SUN	W.	94 35 41	3055	96 4 46	3071	97 33 31	3087	99 1 57	3103
	VENUS	W.	68 59 2	3150	70 26 11	3166	71 53 1	3182	73 19 32	3197
	SATURN	W.	67 41 26	2770	69 16 33	2785	70 51 21	2798	72 25 51	2813
	Antares	W.	47 23 17	2694	49 0 5	2709	50 36 33	2723	52 12 42	2738
	Fomalhaut	E.	40 19 59	3599	39 1 24	3620	37 44 16	3768	36 28 40	3865
	♏ Pegasi	E.	59 23 2	2961	57 52 0	2984	56 21 28	3009	54 51 27	3036
	♈ Arietis	E.	100 43 9	2711	99 6 44	2726	97 30 39	2741	95 54 54	2755

GREENWICH MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
14	SUN W.	100 30 3	3119	101 57 50	3133	103 25 19	3148	104 52 30	3163
	VENUS W.	74 45 45	3213	76 11 39	3227	77 37 16	3242	79 2 35	3257
	SATURN W.	74 0 2	2826	75 33 56	2840	77 7 32	2853	78 40 51	2866
	Antares W.	53 48 31	2752	55 24 2	2766	56 59 14	2779	58 34 9	2792
	α Pegasi E.	53 21 59	3063	51 53 4	3090	50 24 42	3119	48 56 55	3148
	α Arietis E.	94 19 27	2769	92 44 19	2782	91 9 28	2796	89 34 55	2810
15	VENUS W.	86 5 6	3323	87 28 51	3336	88 52 21	3347	90 15 38	3358
	Antares W.	66 24 36	2853	67 57 55	2864	69 31 0	2875	71 3 51	2886
	α Arietis E.	81 46 19	2870	80 13 22	2882	78 40 40	2893	77 8 12	2904
	Aldebaran E.	113 26 59	2937	111 55 27	2947	110 24 8	2956	108 53 0	2965
16	VENUS W.	97 8 52	3411	98 30 56	3421	99 52 49	3430	101 14 32	3439
	Antares W.	78 44 52	2933	80 16 29	2942	81 47 55	2950	83 19 11	2958
	α Arietis E.	69 29 9	2953	67 57 57	2962	66 26 56	2970	64 56 6	2978
	Aldebaran E.	101 20 6	3007	99 50 2	3015	98 20 8	3022	96 50 23	3030
17	Antares W.	90 53 11	2992	92 23 34	2998	93 53 49	3004	95 23 57	3009
	α Aquilæ W.	46 13 38	4516	47 17 16	4447	48 21 55	4386	49 27 29	4330
	α Arietis E.	57 24 26	3017	55 54 34	3023	54 24 50	3030	52 55 15	3037
	Aldebaran E.	89 23 50	3064	87 54 56	3069	86 26 9	3076	84 57 30	3082
	MARS E.	108 37 38	3078	107 9 1	3082	105 40 30	3087	104 12 5	3092
18	α Aquilæ W.	55 6 55	4112	56 16 45	4079	57 27 7	4047	58 38 0	4020
	α Arietis E.	45 29 17	3068	44 0 28	3073	42 31 46	3079	41 3 11	3086
	Aldebaran E.	77 35 56	3108	76 7 56	3113	74 40 2	3118	73 12 14	3122
	MARS E.	96 51 24	3114	95 23 31	3116	93 55 41	3119	92 27 55	3122
19	α Aquilæ W.	64 38 41	3907	65 51 54	3890	67 5 24	3873	68 19 11	3858
	Fomalhaut W.	38 35 49	3986	39 47 42	3933	41 0 28	3885	42 14 3	3840
	Aldebaran E.	65 54 34	3144	64 27 18	3148	63 0 7	3153	61 33 1	3157
	MARS E.	85 9 50	3133	83 42 21	3134	82 14 53	3136	80 47 27	3138
	Pollux E.	108 16 51	3069	106 48 4	3072	105 19 20	3073	103 50 38	3075
20	α Aquilæ W.	74 31 33	3799	75 46 36	3791	77 1 48	3782	78 17 9	3775
	Fomalhaut W.	48 32 5	3674	49 49 20	3649	51 7 2	3626	52 25 8	3604
	Aldebaran E.	54 18 50	3180	52 52 17	3184	51 25 49	3189	49 59 27	3195
	MARS E.	73 30 36	3141	72 3 16	3141	70 35 56	3141	69 8 36	3141
	Pollux E.	96 27 32	3080	94 58 58	3081	93 30 25	3082	92 1 53	3082
21	α Aquilæ W.	84 35 34	3747	85 51 31	3745	87 7 31	3741	88 23 34	3740
	Fomalhaut W.	59 0 57	3519	60 21 0	3506	61 41 18	3493	63 1 50	3480
	α Pegasi W.	36 51 17	3628	38 9 21	3592	39 28 4	3559	40 47 23	3529
	Aldebaran E.	42 49 28	3230	41 23 54	3239	39 58 31	3249	38 33 20	3239
	MARS E.	61 51 51	3138	60 24 27	3137	58 57 2	3136	57 29 36	3134
	Pollux E.	84 39 12	3081	83 10 39	3080	81 42 5	3079	80 13 30	3078
22	Fomalhaut W.	69 47 38	3431	71 9 20	3422	72 31 12	3414	73 53 13	3407
	α Pegasi W.	47 31 19	3415	48 53 18	3397	50 15 38	3380	51 38 17	3365
	MARS E.	50 11 58	3127	48 44 21	3124	47 16 41	3122	45 48 58	3120
	Pollux E.	72 50 15	3072	71 21 31	3070	69 52 45	3068	68 23 56	3066
	Regulus E.	109 44 0	3060	108 15 1	3058	106 46 0	3056	105 16 56	3054

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
14	SUN W.	106 19 24	3177	107 46 1	3191	109 12 21	3204	110 38 25	3218
	VENUS W.	80 27 37	3271	81 52 22	3284	83 16 52	3297	84 41 7	3311
	SATURN W.	80 13 54	2878	81 46 41	2891	83 19 12	2902	84 51 28	2915
	Antares W.	60 8 47	2805	61 43 8	2818	63 17 13	2830	64 51 2	2842
	α Pegasi E.	47 29 44	3180	46 3 11	3213	44 37 17	3247	43 12 4	3284
	α Arietis E.	88 0 40	2822	86 26 41	2835	84 52 58	2847	83 19 31	2859
15	VENUS W.	91 38 42	3370	93 1 33	3381	94 24 11	3392	95 46 37	3401
	Antares W.	72 36 28	2896	74 8 52	2905	75 41 4	2915	77 13 4	2924
	α Arietis E.	75 35 58	2914	74 3 57	2924	72 32 9	2934	71 0 33	2943
	Aldebaran E.	107 22 4	2974	105 51 19	2982	104 20 44	2991	102 50 20	2999
16	VENUS W.	102 36 4	3447	103 57 27	3455	105 18 41	3463	106 39 46	3471
	Antares W.	84 50 17	2965	86 21 14	2973	87 52 1	2979	89 22 40	2985
	α Arietis E.	63 25 26	2987	61 54 57	2994	60 24 37	3002	58 54 27	3009
	Aldebaran E.	95 20 47	3037	93 51 20	3044	92 22 2	3051	90 52 52	3057
17	Antares W.	96 53 58	3014	98 23 53	3019	99 53 42	3024	101 23 25	3029
	α Aquilæ W.	50 33 54	4279	51 41 6	4231	52 49 3	4188	53 57 40	4149
	α Arietis E.	51 25 48	3043	49 56 29	3049	48 27 17	3056	46 58 13	3062
	Aldebaran E.	83 28 58	3087	82 0 33	3052	80 32 14	3058	79 4 2	3103
	MARS E.	102 43 46	3097	101 15 33	3101	99 47 25	3105	98 19 22	3110
18	α Aquilæ W.	59 49 20	3993	61 1 6	3969	62 13 16	3947	63 25 48	3926
	α Arietis E.	39 34 44	3091	38 6 24	3097	36 38 11	3103	35 10 5	3110
	Aldebaran E.	71 44 31	3127	70 16 54	3131	68 49 22	3135	67 21 55	3140
	MARS E.	91 0 12	3125	89 32 33	3127	88 4 56	3129	86 37 22	3131
19	α Aquilæ W.	69 33 13	3844	70 47 30	3832	72 1 59	3820	73 16 40	3809
	Fomalhaut W.	43 28 24	3800	44 43 26	3765	45 59 5	3731	47 15 19	3701
	Aldebaran E.	60 6 0	3161	58 39 4	3166	57 12 14	3170	55 45 29	3175
	MARS E.	79 20 3	3138	77 52 40	3139	76 25 18	3140	74 57 57	3140
	Pollux E.	102 21 58	3076	100 53 19	3078	99 24 42	3078	97 56 6	3080
20	α Aquilæ W.	79 32 37	3768	80 48 12	3762	82 3 54	3757	83 19 41	3751
	Fomalhaut W.	53 43 38	3585	55 2 29	3566	56 21 40	3549	57 41 10	3534
	Aldebaran E.	48 33 12	3201	47 7 4	3205	45 41 4	3214	44 15 12	3221
	MARS E.	67 41 16	3141	66 13 56	3140	64 46 35	3140	63 19 14	3138
	Pollux E.	90 33 21	3082	89 4 49	3082	87 36 17	3082	86 7 45	3081
21	α Aquilæ W.	89 39 39	3739	90 55 45	3737	92 11 53	3737	93 28 1	3737
	Fomalhaut W.	64 22 36	3470	65 43 34	3459	67 4 44	3448	68 26 6	3439
	α Pegasi W.	42 7 15	3502	43 27 37	3478	44 48 26	3454	46 9 41	3434
	Aldebaran E.	37 8 21	3272	35 43 37	3286	34 19 9	3301	32 54 59	3320
	MARS E.	56 2 8	3133	54 34 38	3132	53 7 7	3130	51 39 34	3128
	Pollux E.	78 44 54	3078	77 16 17	3076	75 47 38	3074	74 18 57	3073
22	Fomalhaut W.	75 15 22	3400	76 37 39	3393	78 0 4	3386	79 22 37	3379
	α Pegasi W.	53 1 13	3351	54 24 26	3337	55 47 55	3324	57 11 39	3311
	MARS E.	44 21 13	3118	42 53 25	3115	41 25 34	3113	39 57 40	3110
	Pollux E.	66 55 5	3064	65 26 11	3061	63 57 14	3059	62 28 14	3056
	Regulus E.	103 47 50	3052	102 18 41	3048	100 49 28	3045	99 20 11	3043

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Fomalhaut W.	80 45 17	3373	82 8 4	3368	83 30 57	3362	84 53 57	3357
	α Pegasi W.	58 35 38	3300	59 59 50	3288	61 24 15	3278	62 48 52	3267
	Pollux E.	60 59 11	3053	59 30 4	3051	58 0 54	3047	56 31 40	3044
	Regulus E.	97 50 51	3039	96 21 27	3035	94 51 58	3032	93 22 25	3029
	JUPITER E.	103 56 30	3101	102 28 21	3096	101 0 7	3093	99 31 49	3089
24	Fomalhaut W.	91 50 22	3334	93 13 54	3330	94 37 31	3326	96 1 12	3322
	α Pegasi W.	69 54 55	3220	71 20 41	3211	72 46 37	3203	74 12 43	3198
	α Arietis W.	26 29 59	3089	27 58 22	3077	29 27 0	3065	30 55 53	3054
	Pollux E.	49 4 27	3026	47 34 46	3022	46 5 1	3018	44 35 11	3014
	Regulus E.	85 53 25	3006	84 23 20	3001	82 53 8	2996	81 22 50	2990
	JUPITER E.	92 9 1	3066	90 40 10	3061	89 11 13	3056	87 42 9	3050
25	Fomalhaut W.	103 0 37	3307	104 24 40	3306	105 48 45	3304	107 12 52	3302
	α Pegasi W.	81 25 48	3152	82 52 55	3143	84 20 12	3135	85 47 39	3126
	α Arietis W.	38 23 34	3002	39 53 44	2992	41 24 7	2982	42 54 42	2973
	Pollux E.	37 4 37	2991	35 34 13	2987	34 3 44	2983	32 33 10	2978
	Regulus E.	73 49 31	2959	72 18 27	2953	70 47 15	2945	69 15 53	2938
	JUPITER E.	80 15 0	3018	78 45 10	3011	77 15 11	3004	75 45 3	2997
26	α Pegasi W.	93 7 27	3085	94 35 55	3077	96 4 33	3068	97 33 22	3060
	α Arietis W.	50 30 39	2924	52 2 28	2912	53 34 31	2902	55 6 47	2892
	Regulus E.	61 36 35	2896	60 4 11	2887	58 31 35	2877	56 58 47	2868
	JUPITER E.	68 11 53	2954	66 40 42	2944	65 9 19	2935	63 37 44	2925
	SUN E.	126 39 4	3286	125 14 36	3275	123 49 55	3265	122 25 2	3253
27	α Pegasi W.	105 0 1	3018	106 29 52	3009	107 59 54	3001	109 30 6	2993
	α Arietis W.	62 51 39	2834	64 25 23	2822	65 59 22	2810	67 33 37	2797
	Aldebaran W.	32 6 33	3061	33 35 30	3031	35 5 4	3002	36 35 14	2974
	Regulus E.	49 11 31	2814	47 37 21	2803	46 2 57	2791	44 28 17	2779
	JUPITER E.	55 56 35	2871	54 23 39	2860	52 50 29	2848	51 17 3	2835
	SUN E.	115 17 9	3193	113 50 51	3179	112 24 17	3166	110 57 27	3153
28	α Arietis W.	75 29 9	2730	77 5 9	2716	78 41 28	2701	80 18 6	2687
	Aldebaran W.	44 14 12	2855	45 47 29	2834	47 21 13	2812	48 55 25	2792
	JUPITER E.	43 25 48	2770	41 50 41	2756	40 15 16	2743	38 39 33	2729
	SUN E.	103 39 8	3081	102 10 35	3066	100 41 44	3051	99 12 34	3034
29	α Arietis W.	88 26 17	2610	90 4 58	2594	91 44 1	2579	93 23 25	2562
	Aldebaran W.	56 53 1	2692	58 29 51	2673	60 7 7	2654	61 44 49	2635
	MARS W.	35 35 22	2652	37 13 33	2614	38 52 9	2596	40 31 10	2577
	SUN E.	91 41 42	2952	90 10 29	2935	88 38 55	2918	87 6 59	2901
30	α Arietis W.	101 46 7	2480	103 27 49	2465	105 9 54	2446	106 52 23	2429
	Aldebaran W.	69 59 43	2541	71 39 59	2522	73 20 41	2504	75 1 49	2486
	MARS W.	48 52 31	2487	50 34 3	2468	52 16 1	2450	53 58 25	2431
	SUN E.	79 21 40	2811	77 47 27	2793	76 12 50	2775	74 37 49	2757
31	Aldebaran W.	83 33 51	2396	85 17 31	2379	87 1 36	2362	88 46 6	2345
	MARS W.	62 36 53	2341	64 21 53	2323	66 7 19	2306	67 53 10	2288
	Pollux W.	40 49 6	2352	42 33 50	2333	44 19 2	2315	46 4 40	2296
	SUN E.	66 36 47	2667	64 59 23	2649	63 21 35	2632	61 43 23	2615

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
23	Fomalhaut W.	86 17 3	3351	87 40 15	3347	89 3 32	3343	90 26 54	3338
	α Pegasi W.	64 13 42	3358	65 38 43	3347	67 3 56	3338	68 29 20	3329
	Pollux E.	55 2 22	3041	53 33 0	3037	52 3 33	3034	50 34 2	3030
	Regulus E.	91 52 48	3025	90 23 6	3020	88 53 18	3015	87 23 24	3011
	JUPITER E.	98 3 26	3085	96 34 58	3081	95 6 25	3076	93 37 46	3071
24	Fomalhaut W.	97 24 58	3319	98 48 48	3316	100 12 41	3313	101 36 37	3310
	α Pegasi W.	75 39 0	3185	77 5 27	3177	78 32 4	3168	79 58 51	3160
	α Arietis W.	32 24 59	3043	33 54 18	3032	35 23 51	3028	36 53 36	3012
	Pollux E.	43 5 15	3009	41 35 14	3005	40 5 7	3001	38 34 55	2996
	Regulus E.	79 52 25	2985	78 21 53	2978	76 51 13	2973	75 20 26	2966
	JUPITER E.	86 12 58	3044	84 43 40	3039	83 14 15	3032	81 44 42	3025
25	Fomalhaut W.	108 37 1	3301	110 1 11	3300	111 25 22	3300	112 49 33	3300
	α Pegasi W.	87 15 17	3119	88 43 4	3110	90 11 2	3102	91 39 9	3093
	α Arietis W.	44 25 29	2963	45 56 28	2954	47 27 39	2943	48 59 3	2934
	Pollux E.	31 2 30	2975	29 31 46	2971	28 0 57	2968	26 30 4	2965
	Regulus E.	67 44 22	2930	66 12 41	2922	64 40 50	2913	63 8 48	2905
	JUPITER E.	74 14 46	2989	72 44 19	2980	71 13 41	2972	69 42 53	2962
26	α Pegasi W.	99 2 21	3052	100 31 30	3043	102 0 50	3034	103 30 20	3026
	α Arietis W.	56 39 16	2880	58 12 0	2869	59 44 58	2858	61 18 11	2846
	Regulus E.	55 25 47	2858	53 52 34	2847	52 19 7	2836	50 45 26	2825
	JUPITER E.	62 5 57	2915	60 33 57	2904	59 1 43	2894	57 29 16	2883
	SUN E.	120 59 55	3242	119 34 35	3230	118 9 1	3217	116 43 12	3205
27	α Pegasi W.	111 0 27	2985	112 30 59	2977	114 1 40	2969	115 32 31	2963
	α Arietis W.	69 8 9	2784	70 42 58	2771	72 18 4	2758	73 53 27	2744
	Aldebaran W.	38 5 59	2949	39 37 16	2924	41 9 5	2900	42 41 24	2877
	Regulus E.	42 53 22	2766	41 18 10	2754	39 42 42	2741	38 6 56	2728
	JUPITER E.	49 43 21	2823	48 9 23	2810	46 35 8	2798	45 0 37	2784
	SUN E.	109 30 21	3138	108 2 58	3125	106 35 19	3110	105 7 22	3096
28	α Arietis W.	81 55 4	2672	83 32 21	2657	85 9 59	2642	86 47 57	2626
	Aldebaran W.	50 30 3	2772	52 5 8	2752	53 40 39	2732	55 16 37	2712
	JUPITER E.	37 3 31	2714	35 27 10	2700	33 50 30	2685	32 13 30	2670
	SUN E.	97 43 4	3018	96 13 14	3002	94 43 4	2985	93 12 33	2969
29	α Arietis W.	95 3 12	2546	96 43 21	2530	98 23 53	2513	100 4 48	2496
	Aldebaran W.	63 22 56	2616	65 1 29	2597	66 40 28	2578	68 19 53	2560
	MARS W.	42 10 36	2559	43 50 27	2541	45 30 43	2523	47 11 24	2504
	SUN E.	85 34 41	2883	84 2 0	2865	82 28 56	2848	80 55 30	2829
30	α Arietis W.	108 35 16	2412	110 18 33	2396	112 2 13	2380	113 46 17	2363
	Aldebaran W.	76 43 22	2467	78 25 21	2449	80 7 46	2431	81 50 36	2414
	MARS W.	55 41 14	2414	57 24 29	2395	59 8 11	2377	60 52 19	2359
	SUN E.	73 2 25	2738	71 26 36	2721	69 50 24	2702	68 13 47	2685
31	Aldebaran W.	90 31 0	2328	92 16 18	2313	94 1 59	2297	95 48 3	2281
	MARS W.	69 39 27	2271	71 26 9	2253	73 13 17	2237	75 0 50	2220
	Pollux W.	47 50 45	2279	49 37 16	2262	51 24 12	2245	53 11 33	2228
	SUN E.	60 4 48	2598	58 25 50	2581	56 46 29	2564	55 6 45	2548

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
<i>SUN.</i>	1	^h 14 ^m 28 ^s 42.14	9.825	[°] 14 ['] 41 ["] 26.8	["] -47.67	['] 16 ["] 9.93	^s 67.03	^m 16 ^s 20.14	^s 0.032
Mon.	2	14 32 38.35	9.859	15 0 23.8	47.07	16 10.17	67.14	16 20.49	0.003
Tues.	3	14 36 35.38	9.894	15 19 6.2	46.45	16 10.41	67.26	16 20.01	0.037
Wed.	4	14 40 33.25	9.929	15 37 33.4	-45.81	16 10.65	67.38	16 18.70	0.072
Thur.	5	14 44 31.96	9.963	15 55 45.2	45.15	16 10.89	67.50	16 16.56	0.107
Frid.	6	14 48 31.50	9.998	16 13 40.9	44.48	16 11.13	67.61	16 13.58	0.141
Sat.	7	14 52 31.88	10.034	16 31 20.3	-43.79	16 11.36	67.73	16 9.77	0.176
<i>SUN.</i>	8	14 56 33.10	10.069	16 48 43.0	43.08	16 11.60	67.85	16 5.12	0.211
Mon.	9	15 0 35.15	10.103	17 5 48.4	42.36	16 11.83	67.97	15 59.63	0.246
Tues.	10	15 4 38.05	10.138	17 22 36.2	-41.62	16 12.06	68.09	15 53.31	0.281
Wed.	11	15 8 41.78	10.173	17 39 5.9	40.86	16 12.29	68.21	15 46.16	0.316
Thur.	12	15 12 46.34	10.207	17 55 17.3	40.08	16 12.52	68.33	15 38.17	0.350
Frid.	13	15 16 51.73	10.242	18 11 9.8	-39.29	16 12.74	68.45	15 29.36	0.384
Sat.	14	15 20 57.95	10.277	18 26 43.2	38.48	16 12.96	68.57	15 19.72	0.419
<i>SUN.</i>	15	15 25 5.01	10.311	18 41 57.0	37.66	16 13.18	68.68	15 9.25	0.453
Mon.	16	15 29 12.88	10.345	18 56 50.9	-36.82	16 13.39	68.80	14 57.96	0.487
Tues.	17	15 33 21.58	10.380	19 11 24.5	35.97	16 13.60	68.91	14 45.86	0.522
Wed.	18	15 37 31.10	10.414	19 25 37.4	35.10	16 13.80	69.03	14 32.93	0.556
Thur.	19	15 41 41.44	10.448	19 39 29.3	-34.22	16 14.00	69.14	14 19.19	0.590
Frid.	20	15 45 52.59	10.482	19 52 59.8	33.32	16 14.19	69.25	14 4.64	0.623
Sat.	21	15 50 4.54	10.515	20 6 8.6	32.41	16 14.38	69.36	13 49.28	0.657
<i>SUN.</i>	22	15 54 17.30	10.548	20 18 55.4	-31.48	16 14.57	69.47	13 33.13	0.690
Mon.	23	15 58 30.85	10.581	20 31 19.7	30.54	16 14.75	69.58	13 16.18	0.723
Tues.	24	16 2 45.18	10.613	20 43 21.3	29.58	16 14.92	69.68	12 58.45	0.755
Wed.	25	16 7 0.29	10.645	20 54 59.7	-28.61	16 15.09	69.78	12 39.95	0.787
Thur.	26	16 11 16.16	10.677	21 6 14.7	27.63	16 15.26	69.88	12 20.69	0.818
Frid.	27	16 15 32.78	10.708	21 17 6.0	26.63	16 15.42	69.98	12 0.69	0.849
Sat.	28	16 19 50.12	10.738	21 27 33.1	-25.62	16 15.57	70.08	11 39.96	0.879
<i>SUN.</i>	29	16 24 8.18	10.767	21 37 35.8	24.60	16 15.72	70.17	11 18.52	0.908
Mon.	30	16 28 26.93	10.795	21 47 13.8	23.56	16 15.87	70.25	10 56.38	0.936
Tues.	31	16 32 46.35	10.823	S.21 56 26.8	-22.51	16 16.02	70.34	10 33.58	0.963

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.19 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^s	^h ^m ^s
<i>SUN.</i>	1	14 28 44.82	9.825	S. 14 41 39.8	-47.66	16 20.14	0.031	14 45 4.96
Mon.	2	14 32 41.03	9.860	15 0 36.6	47.06	16 20.49	0.003	14 49 1.52
Tues.	3	14 36 38.08	9.894	15 19 18.8	46.44	16 20.00	0.038	14 52 58.08
Wed.	4	14 40 35.95	9.929	15 37 45.8	-45.81	16 18.68	0.072	14 56 54.63
Thur.	5	14 44 34.66	9.964	15 55 57.4	45.16	16 16.53	0.107	15 0 51.19
Frid.	6	14 48 34.20	9.998	16 13 52.9	44.48	16 13.54	0.142	15 4 47.74
Sat.	7	14 52 34.58	10.033	16 31 32.1	-43.78	16 9.72	0.177	15 8 44.30
<i>SUN.</i>	8	14 56 35.80	10.068	16 48 54.5	43.07	16 5.06	0.212	15 12 40.86
Mon.	9	15 0 37.84	10.103	17 5 59.6	42.35	15 59.57	0.246	15 16 37.41
Tues.	10	15 4 40.73	10.138	17 22 47.2	-41.60	15 53.23	0.281	15 20 33.97
Wed.	11	15 8 44.45	10.172	17 39 16.6	40.84	15 46.07	0.316	15 24 30.52
Thur.	12	15 12 49.00	10.207	17 55 27.7	40.07	15 38.08	0.350	15 28 27.08
Frid.	13	15 16 54.38	10.241	18 11 20.0	-39.28	15 29.26	0.385	15 32 23.64
Sat.	14	15 21 0.58	10.276	18 26 53.0	38.47	15 19.62	0.419	15 36 20.20
<i>SUN.</i>	15	15 25 7.61	10.310	18 42 6.5	37.65	15 9.14	0.454	15 40 16.75
Mon.	16	15 29 15.47	10.344	18 57 0.0	-36.81	14 57.84	0.488	15 44 13.31
Tues.	17	15 33 24.14	10.378	19 11 33.3	35.95	14 45.73	0.522	15 48 9.86
Wed.	18	15 37 33.63	10.412	19 25 45.9	35.09	14 32.79	0.556	15 52 6.42
Thur.	19	15 41 43.94	10.446	19 39 37.4	-34.21	14 19.04	0.590	15 56 2.98
Frid.	20	15 45 55.05	10.480	19 53 7.6	33.31	14 4.49	0.623	15 59 59.54
Sat.	21	15 50 6.96	10.513	20 6 16.1	32.39	13 49.13	0.657	16 3 56.09
<i>SUN.</i>	22	15 54 19.68	10.546	20 19 2.5	-31.47	13 32.97	0.690	16 7 52.65
Mon.	23	15 58 33.19	10.579	20 31 26.4	30.53	13 16.02	0.723	16 11 49.21
Tues.	24	16 2 47.48	10.611	20 43 27.6	29.57	12 58.29	0.755	16 15 45.77
Wed.	25	16 7 2.54	10.643	20 55 5.7	-28.60	12 39.78	0.787	16 19 42.32
Thur.	26	16 11 18.36	10.675	21 6 20.4	27.62	12 20.53	0.818	16 23 38.88
Frid.	27	16 15 34.92	10.705	21 17 11.3	26.62	12 0.52	0.849	16 27 35.44
Sat.	28	16 19 52.21	10.735	21 27 38.1	-25.61	11 39.79	0.879	16 31 32.00
<i>SUN.</i>	29	16 24 10.21	10.764	21 37 40.4	24.59	11 18.35	0.908	16 35 28.56
Mon.	30	16 28 28.90	10.793	21 47 18.1	23.55	10 56.21	0.936	16 39 25.11
Tues.	31	16 32 48.26	10.820	S. 21 56 30.7	-22.50	10 33.41	0.963	16 43 21.67

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour,
+0'.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	306	219 35 48.4	34 56.8	150.31	— 0.25	9.9964357	—45.3	h m s 9 13 24.12
2	307	220 35 57.0	35 5.3	150.40	0.36	9.9963272	45.0	9 9 28.22
3	308	221 36 7.6	35 15.7	150.48	0.45	9.9962194	44.8	9 5 32.31
4	309	222 36 20.2	35 28.2	150.56	— 0.50	9.9961121	—44.6	9 1 36.40
5	310	223 36 34.6	35 42.4	150.64	0.52	9.9960053	44.4	8 57 40.49
6	311	224 36 50.8	35 58.5	150.71	0.52	9.9958990	44.2	8 53 44.58
7	312	225 37 8.6	36 16.1	150.78	— 0.48	9.9957934	—43.9	8 49 48.67
8	313	226 37 28.2	36 35.6	150.85	0.42	9.9956883	43.6	8 45 52.76
9	314	227 37 49.2	36 56.4	150.91	0.33	9.9955840	43.2	8 41 56.85
10	315	228 38 11.8	37 18.9	150.97	— 0.23	9.9954807	—42.8	8 38 0.94
11	316	229 38 35.7	37 42.6	151.02	— 0.11	9.9953785	42.4	8 34 5.03
12	317	230 39 1.0	38 7.7	151.08	+ 0.02	9.9952774	41.9	8 30 9.11
13	318	231 39 27.6	38 34.2	151.14	+ 0.16	9.9951776	—41.3	8 26 13.20
14	319	232 39 55.6	39 2.0	151.20	0.28	9.9950793	40.6	8 22 17.29
15	320	233 40 24.9	39 31.2	151.25	0.38	9.9949828	39.9	8 18 21.38
16	321	234 40 55.4	40 1.5	151.30	+ 0.48	9.9948880	—39.1	8 14 25.47
17	322	235 41 27.3	40 33.2	151.36	0.55	9.9947952	38.3	8 10 29.56
18	323	236 42 0.5	41 6.3	151.41	0.59	9.9947043	37.4	8 6 33.65
19	324	237 42 35.2	41 40.8	151.47	+ 0.60	9.9946157	—36.5	8 2 37.74
20	325	238 43 11.2	42 16.7	151.53	0.58	9.9945292	35.6	7 58 41.83
21	326	239 43 48.7	42 54.0	151.59	0.53	9.9944449	34.6	7 54 45.91
22	327	240 44 27.5	43 32.6	151.65	+ 0.44	9.9943630	—33.7	7 50 50.00
23	328	241 45 8.1	44 13.0	151.72	0.34	9.9942833	32.8	7 46 54.09
24	329	242 45 50.0	44 54.8	151.78	0.22	9.9942057	31.9	7 42 58.18
25	330	243 46 33.7	45 38.3	151.85	+ 0.10	9.9941303	—31.0	7 39 2.27
26	331	244 47 18.7	46 23.1	151.91	— 0.04	9.9940569	30.2	7 35 6.36
27	332	245 48 5.4	47 9.6	151.98	0.18	9.9939854	29.4	7 31 10.44
28	333	246 48 53.5	47 57.5	152.04	— 0.30	9.9939158	—28.7	7 27 14.53
29	334	247 49 43.1	48 47.0	152.10	0.41	9.9938479	28.0	7 23 18.62
30	335	248 50 34.3	49 38.0	152.16	0.50	9.9937815	27.3	7 19 22.71
31	336	249 51 27.0	50 30.5	152.22	— 0.56	9.9937168	—26.6	7 15 26.80
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st .								
Diff. for 1 Hour, — ^g 8296, (Table II.)								

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.	
1	16 20.2	16 26.5	59 50.9	+2.01	60 14.0	+1.83	21 2.8	2.10	25.6	
2	16 32.1	16 36.9	60 34.7	1.59	60 52.1	1.30	21 54.3	2.21	26.6	
3	16 40.6	16 43.1	61 5.8	0.95	61 15.0	+0.58	22 49.1	2.36	27.6	
4	16 44.4	16 44.2	61 19.6	+0.17	61 19.1	-0.25	23 47.9	2.53	28.6	
5	16 42.8	16 39.9	61 13.7	-0.66	61 3.3	1.05	0		0.2	
6	16 35.9	16 30.7	60 48.4	1.41	60 29.4	1.73	0 50.3	2.66	1.2	
7	16 24.6	16 17.7	60 7.0	-1.99	59 41.7	-2.19	1 54.7	2.68	2.2	
8	16 10.3	16 2.5	59 14.5	2.33	58 45.9	2.41	2 58.1	2.58	3.2	
9	15 54.6	15 46.6	58 16.7	2.43	57 47.5	2.41	3 57.7	2.38	4.2	
10	15 38.8	15 31.3	57 18.9	-2.34	56 51.4	-2.23	4 52.2	2.16	5.2	
11	15 24.3	15 17.6	56 25.4	2.10	56 1.1	1.94	5 41.5	1.96	6.2	
12	15 11.6	15 6.1	55 38.9	1.76	55 18.8	1.58	6 26.4	1.80	7.2	
13	15 1.3	14 57.1	55 1.1	-1.38	54 45.7	-1.19	7 8.2	1.70	8.2	
14	14 53.5	14 50.6	54 32.6	0.99	54 21.9	0.80	7 48.3	1.65	9.2	
15	14 48.3	14 46.6	54 13.4	0.62	54 7.1	0.44	8 27.6	1.64	10.2	
16	14 45.4	14 44.8	54 2.8	-0.28	54 0.5	-0.12	9 7.5	1.69	11.2	
17	14 44.7	14 45.0	54 0.0	+0.03	54 1.2	+0.16	9 48.9	1.77	12.2	
18	14 45.7	14 46.9	54 3.9	0.29	54 8.1	0.40	10 32.6	1.88	13.2	
19	14 48.3	14 50.1	54 13.5	+0.50	54 20.1	+0.60	11 19.3	2.01	14.2	
20	14 52.2	14 54.6	54 27.9	0.69	54 36.6	0.77	12 9.0	2.13	15.2	
21	14 57.3	15 0.2	54 46.4	0.85	54 57.1	0.93	13 1.2	2.21	16.2	
22	15 3.4	15 6.8	55 8.7	+1.00	55 21.2	+1.08	13 54.8	2.24	17.2	
23	15 10.4	15 14.3	55 34.6	1.16	55 49.0	1.24	14 48.3	2.21	18.2	
24	15 18.5	15 23.0	56 4.3	1.32	56 20.6	1.40	15 40.6	2.14	19.2	
25	15 27.7	15 32.6	56 37.8	+1.47	56 55.9	+1.55	16 30.9	2.06	20.2	
26	15 37.7	15 43.1	57 14.9	1.62	57 34.7	1.68	17 19.4	1.99	21.2	
27	15 48.7	15 54.3	57 55.1	1.72	58 15.9	1.74	18 6.8	1.96	22.2	
28	16 0.1	16 5.7	58 36.9	+1.74	58 57.7	+1.71	18 54.0	1.99	23.2	
29	16 11.3	16 16.5	59 18.0	1.65	59 37.3	1.54	19 42.5	2.07	24.2	
30	16 21.3	16 25.6	59 55.0	1.40	60 10.8	1.21	20 33.7	2.21	25.2	
31	16 29.2	16 32.0	60 24.0	+0.98	60 34.2	+0.71	21 28.9	2.39	26.2	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 1.					TUESDAY 3.				
0	11 5 48.24	a. 1440	N. 3 29 34.4	16.597	0	12 51 46.41	a. 3033	S. 10 0 0.9	16.430
1	11 7 56.92	a. 1453	3 12 57.4	16.635	1	12 54 4.77	a. 3086	10 16 25.2	16.378
2	11 10 5.68	a. 1467	2 56 18.2	16.670	2	12 56 23.45	a. 3140	10 32 46.3	16.324
3	11 12 14.52	a. 1482	2 39 37.0	16.704	3	12 58 42.45	a. 3194	10 49 4.1	16.268
4	11 14 23.46	a. 1498	2 22 53.8	16.737	4	13 1 1.78	a. 3249	11 5 18.5	16.211
5	11 16 32.50	a. 1515	2 6 8.6	16.768	5	13 3 21.44	a. 3303	11 21 29.4	16.151
6	11 18 41.64	a. 1533	1 49 21.6	16.797	6	13 5 41.42	a. 3359	11 37 36.6	16.088
7	11 20 50.89	a. 1552	1 32 32.9	16.825	7	13 8 1.74	a. 3416	11 53 40.0	16.024
8	11 23 0.26	a. 1571	1 15 42.6	16.852	8	13 10 22.41	a. 3473	12 9 39.5	15.957
9	11 25 9.74	a. 1590	0 58 50.7	16.877	9	13 12 43.42	a. 3531	12 25 34.9	15.888
10	11 27 19.34	a. 1612	0 41 57.4	16.899	10	13 15 4.78	a. 3589	12 41 26.1	15.817
11	11 29 29.08	a. 1634	0 25 2.8	16.920	11	13 17 26.49	a. 3647	12 57 13.0	15.745
12	11 31 38.95	a. 1657	N. 0 8 7.0	16.940	12	13 19 48.55	a. 3706	13 12 55.5	15.670
13	11 33 48.96	a. 1680	S. 0 8 50.0	16.958	13	13 22 10.96	a. 3766	13 28 33.4	15.598
14	11 35 59.11	a. 1704	0 25 48.0	16.974	14	13 24 33.74	a. 3827	13 44 6.5	15.521
15	11 38 9.41	a. 1730	0 42 46.9	16.989	15	13 26 56.88	a. 3887	13 59 34.7	15.438
16	11 40 19.87	a. 1757	0 59 46.7	17.002	16	13 29 20.38	a. 3948	14 14 57.9	15.344
17	11 42 30.49	a. 1785	1 16 47.2	17.013	17	13 31 44.25	a. 4009	14 30 16.0	15.258
18	11 44 41.27	a. 1811	1 33 48.3	17.022	18	13 34 8.49	a. 4071	14 45 28.9	15.169
19	11 46 52.22	a. 1840	1 50 49.9	17.030	19	13 36 33.10	a. 4133	15 0 36.3	15.077
20	11 49 3.35	a. 1870	2 7 51.9	17.037	20	13 38 58.08	a. 4195	15 15 38.2	14.984
21	11 51 14.66	a. 1900	2 24 54.3	17.042	21	13 41 23.44	a. 4258	15 30 34.4	14.888
22	11 53 26.15	a. 1931	2 41 56.9	17.043	22	13 43 49.18	a. 4321	15 45 24.8	14.790
23	11 55 37.83	a. 1963	S. 2 58 59.5	17.043	23	13 46 15.29	a. 4385	S. 16 0 9.2	14.689
MONDAY 2.					WEDNESDAY 4.				
0	11 57 49.71	a. 1997	S. 3 16 2.1	17.042	0	13 48 41.78	a. 4447	S. 16 14 47.5	14.587
1	12 0 1.79	a. 2031	3 33 4.6	17.039	1	13 51 8.65	a. 4511	16 29 19.6	14.482
2	12 2 14.08	a. 2065	3 50 6.8	17.034	2	13 53 35.91	a. 4575	16 43 45.3	14.375
3	12 4 26.57	a. 2100	4 7 8.7	17.027	3	13 56 3.55	a. 4638	16 58 4.6	14.266
4	12 6 39.28	a. 2137	4 24 10.1	17.019	4	13 58 31.57	a. 4702	17 12 17.2	14.154
5	12 8 52.21	a. 2174	4 41 11.0	17.009	5	14 0 59.98	a. 4767	17 26 23.1	14.041
6	12 11 5.37	a. 2213	4 58 11.2	16.997	6	14 3 28.77	a. 4831	17 40 22.1	13.924
7	12 13 18.76	a. 2252	5 15 10.6	16.982	7	14 5 57.95	a. 4895	17 54 14.0	13.806
8	12 15 32.39	a. 2291	5 32 9.0	16.965	8	14 8 27.51	a. 4959	18 7 58.8	13.686
9	12 17 46.25	a. 2331	5 49 6.4	16.947	9	14 10 57.46	a. 5023	18 21 36.3	13.563
10	12 20 0.36	a. 2373	6 6 2.6	16.927	10	14 13 27.79	a. 5088	18 35 6.3	13.438
11	12 22 14.73	a. 2416	6 22 57.6	16.905	11	14 15 58.51	a. 5152	18 48 28.8	13.311
12	12 24 29.35	a. 2459	6 39 51.2	16.881	12	14 18 29.61	a. 5215	19 1 43.6	13.182
13	12 26 44.23	a. 2503	6 56 43.3	16.854	13	14 21 1.09	a. 5278	19 14 50.6	13.050
14	12 28 59.38	a. 2547	7 13 33.7	16.826	14	14 23 32.95	a. 5342	19 27 49.6	12.917
15	12 31 14.79	a. 2592	7 30 22.4	16.796	15	14 26 5.20	a. 5406	19 40 40.6	12.781
16	12 33 30.48	a. 2638	7 47 9.2	16.763	16	14 28 37.82	a. 5468	19 53 23.3	12.643
17	12 35 46.45	a. 2685	8 3 54.0	16.728	17	14 31 10.81	a. 5530	20 5 57.7	12.503
18	12 38 2.70	a. 2732	8 20 36.6	16.692	18	14 33 44.18	a. 5592	20 18 23.7	12.362
19	12 40 19.24	a. 2781	8 37 17.0	16.653	19	14 36 17.92	a. 5654	20 30 41.1	12.218
20	12 42 36.07	a. 2830	8 53 55.0	16.613	20	14 38 52.03	a. 5715	20 42 49.8	12.071
21	12 44 53.20	a. 2880	9 10 30.6	16.571	21	14 41 26.50	a. 5776	20 54 49.6	11.922
22	12 47 10.63	a. 2931	9 27 3.5	16.525	22	14 44 1.34	a. 5837	21 6 40.5	11.772
23	12 49 28.37	a. 2982	9 43 33.6	16.478	23	14 46 36.54	a. 5897	21 18 22.3	11.621
24	12 51 46.41	a. 3033	S. 10 0 0.9	16.430	24	14 49 12.10	a. 5956	S. 21 29 55.0	11.467

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 5.					SATURDAY 7.				
0	14 49 12.10	2.3936	S.21 29 55.0	11.467	0	16 58 31.14	2.7349	S.27 13 47.1	2.473
1	14 51 48.01	2.6014	21 41 18.4	11.311	1	17 1 15.20	2.7337	27 16 9.4	2.271
2	14 54 24.27	2.6071	21 52 32.3	11.153	2	17 3 59.18	2.7322	27 18 19.6	2.068
3	14 57 0.87	2.6128	22 3 36.7	10.993	3	17 6 43.06	2.7304	27 20 17.6	1.866
4	14 59 37.81	2.6185	22 14 31.5	10.832	4	17 9 26.83	2.7286	27 22 3.5	1.664
5	15 2 15.09	2.6241	22 25 16.5	10.668	5	17 12 10.49	2.7266	27 23 37.3	1.463
6	15 4 52.70	2.6295	22 35 51.6	10.503	6	17 14 54.02	2.7243	27 24 59.1	1.263
7	15 7 30.63	2.6348	22 46 16.8	10.336	7	17 17 37.41	2.7219	27 26 8.9	1.063
8	15 10 8.87	2.6400	22 56 31.9	10.167	8	17 20 20.65	2.7192	27 27 6.7	0.863
9	15 12 47.43	2.6452	23 6 36.9	9.997	9	17 23 3.72	2.7164	27 27 52.4	0.663
10	15 15 26.30	2.6504	23 16 31.6	9.825	10	17 25 46.62	2.7134	27 28 26.2	0.463
11	15 18 5.48	2.6554	23 26 15.9	9.651	11	17 28 29.33	2.7102	27 28 48.2	0.267
12	15 20 44.95	2.6602	23 35 49.7	9.476	12	17 31 11.85	2.7069	27 28 58.3	-0.070
13	15 23 24.71	2.6650	23 45 13.0	9.299	13	17 33 54.16	2.7033	27 28 56.6	+0.127
14	15 26 4.75	2.6697	23 54 25.6	9.121	14	17 36 36.25	2.6996	27 28 43.1	0.322
15	15 28 45.07	2.6742	24 3 27.5	8.941	15	17 39 18.11	2.6957	27 28 17.9	0.517
16	15 31 25.65	2.6785	24 12 18.5	8.759	16	17 41 59.73	2.6916	27 27 41.1	0.711
17	15 34 6.49	2.6828	24 20 58.6	8.577	17	17 44 41.10	2.6874	27 26 52.6	0.904
18	15 36 47.59	2.6870	24 29 27.7	8.393	18	17 47 22.22	2.6831	27 25 52.6	1.096
19	15 39 28.93	2.6909	24 37 45.7	8.207	19	17 50 3.07	2.6784	27 24 41.1	1.287
20	15 42 10.50	2.6947	24 45 52.6	8.021	20	17 52 43.63	2.6736	27 23 18.2	1.477
21	15 44 52.30	2.6985	24 53 48.2	7.833	21	17 55 23.90	2.6687	27 21 43.9	1.666
22	15 47 34.32	2.7021	25 1 32.5	7.644	22	17 58 3.87	2.6636	27 19 58.3	1.853
23	15 50 16.55	2.7055	S.25 9 5.5	7.454	23	18 0 43.53	2.6583	S.27 18 1.5	2.040
FRIDAY 6.					SUNDAY 8.				
0	15 52 58.98	2.7087	S.25 16 27.0	7.262	0	18 3 22.87	2.6529	S.27 15 53.5	2.226
1	15 55 41.60	2.7118	25 23 37.0	7.070	1	18 6 1.88	2.6474	27 13 34.4	2.410
2	15 58 24.40	2.7148	25 30 35.4	6.877	2	18 8 40.56	2.6417	27 11 4.3	2.592
3	16 1 7.38	2.7177	25 37 22.2	6.683	3	18 11 18.89	2.6358	27 8 23.3	2.773
4	16 3 50.52	2.7203	25 43 57.3	6.488	4	18 13 56.86	2.6299	27 5 31.5	2.954
5	16 6 33.81	2.7228	25 50 20.7	6.292	5	18 16 34.48	2.6239	27 2 28.8	3.134
6	16 9 17.25	2.7251	25 56 32.3	6.094	6	18 19 11.73	2.6177	26 59 15.4	3.312
7	16 12 0.82	2.7272	26 2 32.0	5.897	7	18 21 48.60	2.6113	26 55 51.4	3.488
8	16 14 44.51	2.7291	26 8 19.9	5.699	8	18 24 25.08	2.6048	26 52 16.9	3.663
9	16 17 28.31	2.7308	26 13 55.9	5.500	9	18 27 1.17	2.5982	26 48 31.9	3.837
10	16 20 12.21	2.7324	26 19 19.9	5.300	10	18 29 36.86	2.5915	26 44 36.5	4.008
11	16 22 56.20	2.7338	26 24 31.9	5.100	11	18 32 12.15	2.5847	26 40 30.9	4.177
12	16 25 40.27	2.7351	26 29 31.9	4.899	12	18 34 47.02	2.5777	26 36 15.2	4.346
13	16 28 24.41	2.7361	26 34 19.8	4.698	13	18 37 21.47	2.5707	26 31 49.4	4.514
14	16 31 8.60	2.7369	26 38 55.7	4.497	14	18 39 55.50	2.5635	26 27 13.5	4.681
15	16 33 52.84	2.7376	26 43 19.5	4.296	15	18 42 29.09	2.5562	26 22 27.7	4.845
16	16 36 37.11	2.7381	26 47 31.2	4.094	16	18 45 2.24	2.5489	26 17 32.1	5.007
17	16 39 21.41	2.7384	26 51 30.7	3.891	17	18 47 34.95	2.5415	26 12 26.8	5.168
18	16 42 5.72	2.7385	26 55 18.1	3.688	18	18 50 7.22	2.5340	26 7 11.9	5.328
19	16 44 50.03	2.7383	26 58 53.3	3.486	19	18 52 39.03	2.5265	26 1 47.5	5.486
20	16 47 34.32	2.7380	27 2 16.4	3.283	20	18 55 10.38	2.5187	25 56 13.6	5.642
21	16 50 18.59	2.7375	27 5 27.3	3.081	21	18 57 41.27	2.5110	25 50 30.5	5.795
22	16 53 2.82	2.7368	27 8 26.1	2.878	22	19 0 11.70	2.5032	25 44 38.2	5.948
23	16 55 47.01	2.7360	27 11 12.7	2.675	23	19 2 41.65	2.4953	25 38 36.7	6.100
24	16 58 31.14	2.7349	S.27 13 47.1	2.473	24	19 5 11.13	2.4873	S.25 32 26.2	6.249

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 9.					WEDNESDAY 11.				
0	19 5 11.13	2.4873	S. 25 32 26.2	6.249	0	20 55 4.46	2.0980	S. 18 12 34.2	11.458
1	19 7 40.13	2.4793	25 26 6.8	6.397	1	20 57 10.12	2.0908	18 1 5.0	11.528
2	19 10 8.65	2.4712	25 19 38.6	6.543	2	20 59 15.36	2.0837	17 49 31.6	11.592
3	19 12 36.68	2.4631	25 13 1.6	6.687	3	21 1 20.17	2.0767	17 37 54.0	11.661
4	19 15 4.22	2.4549	25 6 16.1	6.829	4	21 3 24.56	2.0697	17 26 12.3	11.727
5	19 17 31.27	2.4467	24 59 22.1	6.971	5	21 5 28.53	2.0627	17 14 26.8	11.790
6	19 19 57.83	2.4385	24 52 19.6	7.110	6	21 7 32.08	2.0558	17 2 37.5	11.853
7	19 22 23.89	2.4302	24 45 8.9	7.247	7	21 9 35.22	2.0490	16 50 44.4	11.916
8	19 24 49.45	2.4219	24 37 50.0	7.383	8	21 11 37.96	2.0422	16 38 47.5	11.978
9	19 27 14.52	2.4137	24 30 22.9	7.518	9	21 13 40.29	2.0355	16 26 47.0	12.038
10	19 29 39.09	2.4053	24 22 47.8	7.650	10	21 15 42.22	2.0289	16 14 42.9	12.097
11	19 32 3.16	2.3969	24 15 4.9	7.780	11	21 17 43.76	2.0224	16 2 35.3	12.154
12	19 34 26.72	2.3885	24 7 14.2	7.909	12	21 19 44.91	2.0160	15 50 24.4	12.209
13	19 36 49.78	2.3801	23 59 15.8	8.037	13	21 21 45.68	2.0096	15 38 10.2	12.265
14	19 39 12.33	2.3717	23 51 9.8	8.162	14	21 23 46.07	2.0033	15 25 52.6	12.320
15	19 41 34.38	2.3632	23 42 56.4	8.285	15	21 25 46.08	1.9971	15 13 31.8	12.372
16	19 43 55.92	2.3547	23 34 35.6	8.407	16	21 27 45.72	1.9910	15 1 7.9	12.423
17	19 46 16.95	2.3463	23 26 7.5	8.527	17	21 29 45.00	1.9849	14 48 41.0	12.474
18	19 48 37.48	2.3379	23 17 32.3	8.646	18	21 31 43.91	1.9788	14 36 11.0	12.524
19	19 50 57.50	2.3295	23 8 50.0	8.762	19	21 33 42.46	1.9730	14 23 38.1	12.572
20	19 53 17.02	2.3211	23 0 0.8	8.877	20	21 35 40.67	1.9672	14 11 2.4	12.618
21	19 55 36.03	2.3127	22 51 4.7	8.991	21	21 37 38.53	1.9615	13 58 23.9	12.664
22	19 57 54.54	2.3042	22 42 1.9	9.103	22	21 39 36.05	1.9558	13 45 42.7	12.709
23	20 0 12.54	2.2958	S. 22 32 52.4	9.213	23	21 41 33.23	1.9502	S. 13 32 58.8	12.752
TUESDAY 10.					THURSDAY 12.				
0	20 2 30.04	2.2873	S. 22 23 36.3	9.322	0	21 43 30.07	1.9447	S. 13 20 12.4	12.794
1	20 4 47.04	2.2792	22 14 13.8	9.428	1	21 45 26.59	1.9392	13 7 23.5	12.837
2	20 7 3.54	2.2708	22 4 44.9	9.533	2	21 47 22.78	1.9338	12 54 32.0	12.878
3	20 9 19.54	2.2626	21 55 9.8	9.637	3	21 49 18.65	1.9286	12 41 38.1	12.917
4	20 11 35.05	2.2543	21 45 28.5	9.738	4	21 51 14.21	1.9235	12 28 41.9	12.955
5	20 13 50.06	2.2460	21 35 41.2	9.838	5	21 53 9.47	1.9184	12 15 43.5	12.993
6	20 16 4.57	2.2378	21 25 47.9	9.937	6	21 55 4.42	1.9133	12 2 42.8	13.030
7	20 18 18.59	2.2297	21 15 48.7	10.034	7	21 56 59.07	1.9084	11 49 39.9	13.065
8	20 20 32.13	2.2216	21 5 43.8	10.129	8	21 58 53.43	1.9036	11 36 35.0	13.099
9	20 22 45.18	2.2134	20 55 33.2	10.223	9	22 0 47.50	1.8988	11 23 28.0	13.133
10	20 24 57.74	2.2054	20 45 17.0	10.316	10	22 2 41.28	1.8941	11 10 19.0	13.166
11	20 27 9.83	2.1973	20 34 55.3	10.407	11	22 4 34.79	1.8895	10 57 8.1	13.197
12	20 29 21.44	2.1893	20 24 28.1	10.497	12	22 6 28.02	1.8849	10 43 55.3	13.228
13	20 31 32.57	2.1816	20 13 55.7	10.584	13	22 8 20.98	1.8805	10 30 40.7	13.258
14	20 33 43.23	2.1737	20 3 18.1	10.670	14	22 10 13.68	1.8761	10 17 24.3	13.287
15	20 35 53.41	2.1658	19 52 35.3	10.755	15	22 12 6.12	1.8718	10 4 6.3	13.314
16	20 38 3.12	2.1581	19 41 47.5	10.838	16	22 13 58.30	1.8676	9 50 46.6	13.341
17	20 40 12.38	2.1505	19 30 54.7	10.920	17	22 15 50.23	1.8635	9 37 25.3	13.368
18	20 42 21.18	2.1428	19 19 57.1	10.999	18	22 17 41.92	1.8595	9 24 2.4	13.395
19	20 44 29.52	2.1352	19 8 54.8	11.078	19	22 19 33.37	1.8556	9 10 38.1	13.418
20	20 46 37.40	2.1276	18 57 47.7	11.156	20	22 21 24.59	1.8517	8 57 12.3	13.442
21	20 48 44.83	2.1201	18 46 36.0	11.232	21	22 23 15.57	1.8478	8 43 45.1	13.465
22	20 50 51.82	2.1127	18 35 19.8	11.307	22	22 25 6.33	1.8441	8 30 16.5	13.487
23	20 52 58.36	2.1053	18 23 59.2	11.380	23	22 26 56.87	1.8405	8 16 46.7	13.507
24	20 55 4.46	2.0980	S. 18 12 34.2	11.452	24	22 28 47.19	1.8369	S. 8 3 15.7	13.527

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 13.					SUNDAY 15.				
0	22 28 47.19	1.8369	S. 8 3 15.7	13.587	0	23 54 23.96	1.7399	N. 2 54 55.2	13.685
1	22 30 37.30	1.8335	7 49 43.5	13.547	1	23 56 9.56	1.7608	3 8 32.3	13.610
2	22 32 27.21	1.8301	7 36 10.1	13.565	2	23 57 55.18	1.7608	3 22 8.4	13.594
3	22 34 16.92	1.8268	7 22 35.7	13.583	3	23 59 40.82	1.7608	3 35 43.6	13.578
4	22 36 6.43	1.8237	7 9 0.2	13.600	4	0 1 26.48	1.7613	3 49 17.8	13.561
5	22 37 55.76	1.8206	6 55 23.7	13.617	5	0 3 12.18	1.7619	4 2 50.9	13.543
6	22 39 44.90	1.8175	6 41 46.2	13.632	6	0 4 57.91	1.7624	4 16 23.0	13.526
7	22 41 33.86	1.8145	6 28 7.9	13.646	7	0 6 43.67	1.7631	4 29 54.0	13.507
8	22 43 22.64	1.8116	6 14 28.7	13.660	8	0 8 29.48	1.7639	4 43 23.8	13.487
9	22 45 11.25	1.8088	6 0 48.7	13.673	9	0 10 15.34	1.7647	4 56 52.5	13.467
10	22 46 59.69	1.8061	5 47 8.0	13.685	10	0 12 1.25	1.7656	5 10 19.9	13.446
11	22 48 47.98	1.8035	5 33 26.5	13.697	11	0 13 47.21	1.7665	5 23 46.0	13.424
12	22 50 36.11	1.8009	5 19 44.3	13.708	12	0 15 33.23	1.7675	5 37 10.8	13.402
13	22 52 24.08	1.7983	5 6 1.5	13.718	13	0 17 19.31	1.7686	5 50 34.3	13.379
14	22 54 11.91	1.7956	4 52 18.2	13.727	14	0 19 5.46	1.7697	6 3 56.3	13.355
15	22 55 59.60	1.7937	4 38 34.3	13.736	15	0 20 51.68	1.7709	6 17 16.9	13.331
16	22 57 47.15	1.7914	4 24 49.9	13.743	16	0 22 37.97	1.7722	6 30 36.0	13.306
17	22 59 34.57	1.7892	4 11 5.1	13.750	17	0 24 24.35	1.7736	6 43 53.6	13.281
18	23 1 21.85	1.7870	3 57 19.9	13.757	18	0 26 10.81	1.7750	6 57 9.7	13.255
19	23 3 9.01	1.7851	3 43 34.3	13.762	19	0 27 57.35	1.7765	7 10 24.2	13.227
20	23 4 56.06	1.7832	3 29 48.4	13.767	20	0 29 43.99	1.7781	7 23 37.0	13.199
21	23 6 42.99	1.7813	3 16 2.3	13.771	21	0 31 30.72	1.7797	7 36 48.1	13.171
22	23 8 29.81	1.7795	3 2 15.9	13.775	22	0 33 17.55	1.7814	7 49 57.5	13.142
23	23 10 16.53	1.7778	S. 2 48 29.3	13.777	23	0 35 4.49	1.7831	N. 8 3 5.1	13.112
SATURDAY 14.					MONDAY 16.				
0	23 12 3.15	1.7762	S. 2 34 42.6	13.779	0	0 36 51.53	1.7849	N. 8 16 10.9	13.082
1	23 13 49.67	1.7746	2 20 55.8	13.781	1	0 38 38.68	1.7868	8 29 14.9	13.050
2	23 15 36.10	1.7738	2 7 8.9	13.782	2	0 40 25.95	1.7888	8 42 16.9	13.017
3	23 17 22.45	1.7718	1 53 22.0	13.782	3	0 42 13.34	1.7908	8 55 17.0	12.985
4	23 19 8.72	1.7705	1 39 35.1	13.781	4	0 44 0.85	1.7929	9 8 15.1	12.952
5	23 20 54.91	1.7692	1 25 48.3	13.779	5	0 45 48.49	1.7950	9 21 11.2	12.917
6	23 22 41.02	1.7680	1 12 1.6	13.777	6	0 47 36.25	1.7971	9 34 5.2	12.882
7	23 24 27.07	1.7670	0 58 15.0	13.775	7	0 49 24.14	1.7994	9 46 57.1	12.847
8	23 26 13.06	1.7659	0 44 28.6	13.771	8	0 51 12.18	1.8018	9 59 46.8	12.810
9	23 27 58.98	1.7649	0 30 42.5	13.767	9	0 53 0.36	1.8042	10 12 34.3	12.773
10	23 29 44.85	1.7641	0 16 56.6	13.762	10	0 54 48.68	1.8066	10 25 19.6	12.735
11	23 31 30.68	1.7634	S. 0 3 11.0	13.757	11	0 56 37.15	1.8091	10 38 2.5	12.696
12	23 33 16.46	1.7627	N. 0 10 34.2	13.750	12	0 58 25.78	1.8117	10 50 43.1	12.657
13	23 35 2.20	1.7620	0 24 19.0	13.743	13	1 0 14.56	1.8143	11 3 21.3	12.617
14	23 36 47.90	1.7614	0 38 3.4	13.736	14	1 2 3.50	1.8171	11 15 57.1	12.576
15	23 38 33.57	1.7609	0 51 47.4	13.728	15	1 3 52.61	1.8198	11 28 30.4	12.534
16	23 40 19.21	1.7606	1 5 30.8	13.719	16	1 5 41.88	1.8226	11 41 1.2	12.492
17	23 42 4.84	1.7603	1 19 13.7	13.710	17	1 7 31.32	1.8254	11 53 29.4	12.448
18	23 43 50.45	1.7600	1 32 56.0	13.700	18	1 9 20.93	1.8283	12 5 55.0	12.404
19	23 45 36.04	1.7598	1 46 37.7	13.689	19	1 11 10.72	1.8313	12 18 17.9	12.359
20	23 47 21.63	1.7597	2 0 18.7	13.678	20	1 13 0.69	1.8343	12 30 38.1	12.314
21	23 49 7.21	1.7597	2 13 59.0	13.666	21	1 14 50.84	1.8374	12 42 55.6	12.267
22	23 50 52.79	1.7597	2 27 38.6	13.653	22	1 16 41.18	1.8406	12 55 10.2	12.219
23	23 52 38.37	1.7598	2 41 17.3	13.639	23	1 18 31.71	1.8438	13 7 21.9	12.172
24	23 54 23.96	1.7599	N. 2 54 55.2	13.625	24	1 20 22.44	1.8471	N. 13 19 30.8	12.124

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 17.					THURSDAY 19.				
0	h m s	s	N. 13 19 30.8	18.124	0	h m s	s	N. 21 48 51.4	8.751
1	1 20 22.44	1.8471	13 31 36.8	18.074	1	2 55 42.11	2.0573	21 57 33.7	8.658
2	1 22 13.36	1.8503	13 43 39.7	18.023	2	2 57 45.70	2.0622	22 6 10.4	8.564
3	1 24 4.48	1.8537	13 55 39.5	11.971	3	2 59 49.58	2.0672	22 14 41.4	8.469
4	1 27 47.34	1.8566	14 7 36.2	11.919	4	3 1 53.76	2.0721	22 23 6.7	8.373
5	1 29 39.08	1.8648	14 19 29.8	11.867	5	3 3 58.23	2.0770	22 31 26.2	8.276
6	1 31 31.04	1.8677	14 31 20.2	11.813	6	3 6 3.00	2.0819	22 39 39.8	8.176
7	1 33 23.21	1.8713	14 43 7.3	11.758	7	3 8 8.06	2.0868	22 47 47.5	8.079
8	1 35 15.60	1.8750	14 54 51.2	11.705	8	3 10 13.42	2.0917	22 55 49.3	7.980
9	1 37 8.21	1.8787	15 6 31.7	11.647	9	3 12 19.07	2.0966	23 3 45.1	7.879
10	1 39 1.05	1.8825	15 18 8.8	11.590	10	3 14 25.01	2.1014	23 11 34.8	7.777
11	1 40 54.11	1.8863	15 29 42.5	11.532	11	3 16 31.24	2.1063	23 19 18.4	7.675
12	1 42 47.40	1.8901	15 41 12.6	11.473	12	3 18 37.77	2.1112	23 26 55.8	7.571
13	1 44 40.93	1.8941	15 52 39.2	11.413	13	3 20 44.59	2.1160	23 34 26.9	7.467
14	1 46 34.69	1.8980	16 4 2.2	11.352	14	3 22 51.69	2.1208	23 41 51.8	7.362
15	1 48 28.69	1.9020	16 15 21.5	11.291	15	3 24 59.09	2.1257	23 49 10.3	7.255
16	1 50 22.93	1.9061	16 26 37.1	11.229	16	3 27 6.78	2.1305	23 56 22.4	7.147
17	1 52 17.42	1.9101	16 37 49.0	11.166	17	3 29 14.75	2.1352	24 3 28.0	7.039
18	1 54 12.15	1.9143	16 48 57.0	11.102	18	3 31 23.01	2.1400	24 10 27.1	6.930
19	1 56 7.13	1.9184	17 0 1.2	11.037	19	3 33 31.55	2.1447	24 17 19.6	6.820
20	1 58 2.36	1.9227	17 11 1.5	10.971	20	3 35 40.37	2.1494	24 24 5.5	6.708
21	1 59 57.85	1.9269	17 21 57.7	10.904	21	3 37 49.48	2.1542	24 30 44.6	6.596
22	2 1 53.59	1.9312	17 32 49.9	10.836	22	3 39 58.87	2.1588	24 37 17.0	6.484
23	2 3 49.59	1.9355	N. 17 43 38.0	10.767	23	3 42 8.53	2.1634	N. 24 43 42.7	6.371
WEDNESDAY 18.					FRIDAY 20.				
0	2 5 45.85	1.9398	N. 17 54 22.0	10.698	0	3 44 18.47	2.1680	N. 24 50 1.5	6.256
1	2 7 42.37	1.9442	18 5 1.8	10.628	1	3 46 28.69	2.1726	24 56 13.4	6.140
2	2 9 39.16	1.9487	18 15 37.4	10.557	2	3 48 39.18	2.1770	25 2 18.3	6.024
3	2 11 36.21	1.9531	18 26 8.6	10.484	3	3 50 49.93	2.1814	25 8 16.2	5.908
4	2 13 33.53	1.9576	18 36 35.5	10.411	4	3 53 0.95	2.1859	25 14 7.0	5.788
5	2 15 31.12	1.9622	18 46 58.0	10.337	5	3 55 12.24	2.1903	25 19 50.8	5.670
6	2 17 28.99	1.9667	18 57 16.0	10.262	6	3 57 23.79	2.1947	25 25 27.4	5.549
7	2 19 27.13	1.9713	19 7 29.5	10.187	7	3 59 35.60	2.1990	25 30 56.7	5.428
8	2 21 25.55	1.9759	19 17 38.4	10.110	8	4 1 47.67	2.2032	25 36 18.8	5.307
9	2 23 24.24	1.9805	19 27 42.7	10.032	9	4 3 59.99	2.2074	25 41 33.6	5.185
10	2 25 23.21	1.9852	19 37 42.3	9.953	10	4 6 12.56	2.2116	25 46 41.0	5.062
11	2 27 22.46	1.9899	19 47 37.1	9.873	11	4 8 25.38	2.2158	25 51 41.0	4.938
12	2 29 22.00	1.9946	19 57 27.1	9.792	12	4 10 38.45	2.2198	25 56 33.5	4.813
13	2 31 21.82	1.9993	20 7 12.2	9.711	13	4 12 51.76	2.2238	26 1 18.5	4.688
14	2 33 21.92	2.0041	20 16 52.4	9.629	14	4 15 5.31	2.2277	26 5 56.0	4.562
15	2 35 22.31	2.0088	20 26 27.7	9.546	15	4 17 19.09	2.2316	26 10 25.9	4.434
16	2 37 22.98	2.0136	20 35 57.9	9.461	16	4 19 33.10	2.2354	26 14 48.1	4.306
17	2 39 23.94	2.0185	20 45 23.0	9.376	17	4 21 47.34	2.2392	26 19 2.6	4.177
18	2 41 25.20	2.0234	20 54 43.0	9.289	18	4 24 1.81	2.2430	26 23 9.4	4.048
19	2 43 26.75	2.0282	21 3 57.7	9.202	19	4 26 16.50	2.2466	26 27 8.4	3.918
20	2 45 28.58	2.0329	21 13 7.2	9.114	20	4 28 31.40	2.2502	26 30 59.6	3.787
21	2 47 30.70	2.0378	21 22 11.4	9.025	21	4 30 46.52	2.2537	26 34 42.9	3.656
22	2 49 33.11	2.0427	21 31 10.2	8.935	22	4 33 1.85	2.2571	26 38 18.3	3.524
23	2 51 35.82	2.0476	21 40 3.6	8.843	23	4 35 17.38	2.2604	26 41 45.8	3.392
24	2 53 38.82	2.0524	N. 21 48 51.4	8.751	24	4 37 33.10	2.2637	N. 26 45 5.3	3.258

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.				
0	4 37 33.10	2.2657	N.26 45 5.3	3.258	0	6 28 24.04	2.3200	N.26 39 28.3	3.575
1	4 39 49.02	2.2669	26 48 16.8	3.124	1	6 30 43.21	2.3189	26 35 49.5	3.718
2	4 42 5.13	2.2701	26 51 20.2	2.989	2	6 33 2.31	2.3178	26 32 2.1	3.862
3	4 44 21.44	2.2733	26 54 15.5	2.854	3	6 35 21.35	2.3168	26 28 6.1	4.005
4	4 46 37.93	2.2764	26 57 2.7	2.718	4	6 37 40.31	2.3153	26 24 1.5	4.147
5	4 48 54.59	2.2791	26 59 41.7	2.582	5	6 39 59.19	2.3140	26 19 48.4	4.290
6	4 51 11.42	2.2819	27 2 12.5	2.445	6	6 42 17.99	2.3126	26 15 26.7	4.432
7	4 53 28.42	2.2847	27 4 35.1	2.307	7	6 44 36.70	2.3110	26 10 56.5	4.574
8	4 55 45.58	2.2873	27 6 49.4	2.169	8	6 46 55.31	2.3094	26 6 17.8	4.716
9	4 58 2.90	2.2899	27 8 55.4	2.031	9	6 49 13.83	2.3078	26 1 30.6	4.857
10	5 0 20.37	2.2924	27 10 53.1	1.892	10	6 51 32.25	2.3061	25 56 35.0	4.997
11	5 2 37.99	2.2949	27 12 42.4	1.752	11	6 53 50.56	2.3044	25 51 30.9	5.138
12	5 4 55.76	2.2973	27 14 23.4	1.612	12	6 56 8.75	2.3023	25 46 18.4	5.278
13	5 7 13.67	2.2995	27 15 55.9	1.472	13	6 58 26.83	2.3003	25 40 57.5	5.417
14	5 9 31.70	2.3016	27 17 20.0	1.332	14	7 0 44.79	2.2983	25 35 28.3	5.556
15	5 11 49.86	2.3037	27 18 35.7	1.191	15	7 3 2.63	2.2962	25 29 50.8	5.694
16	5 14 8.14	2.3057	27 19 42.9	1.048	16	7 5 20.34	2.2941	25 24 5.0	5.832
17	5 16 26.54	2.3076	27 20 41.5	0.906	17	7 7 37.92	2.2920	25 18 10.9	5.970
18	5 18 45.05	2.3094	27 21 31.6	0.764	18	7 9 55.38	2.2898	25 12 8.6	6.107
19	5 21 3.66	2.3111	27 22 13.2	0.622	19	7 12 12.70	2.2874	25 5 58.1	6.243
20	5 23 22.38	2.3127	27 22 46.2	0.478	20	7 14 29.87	2.2850	24 59 39.4	6.379
21	5 25 41.19	2.3142	27 23 10.6	0.335	21	7 16 46.90	2.2826	24 53 12.6	6.514
22	5 28 0.08	2.3156	27 23 26.4	0.192	22	7 19 3.78	2.2801	24 46 37.7	6.649
23	5 30 19.06	2.3170	N.27 23 33.6	+ 0.048	23	7 21 20.51	2.2776	N.24 39 54.7	6.783
SUNDAY 22.					TUESDAY 24.				
0	5 32 38.12	2.3182	N.27 23 32.2	- 0.096	0	7 23 37.09	2.2750	N.24 33 3.7	6.916
1	5 34 57.25	2.3193	27 23 22.1	0.241	1	7 25 53.51	2.2723	24 26 4.7	7.049
2	5 37 16.44	2.3204	27 23 3.3	0.385	2	7 28 9.77	2.2697	24 18 57.8	7.182
3	5 39 35.70	2.3214	27 22 35.9	0.529	3	7 30 25.88	2.2671	24 11 42.9	7.314
4	5 41 55.01	2.3222	27 21 59.8	0.674	4	7 32 41.82	2.2643	24 4 20.1	7.445
5	5 44 14.37	2.3230	27 21 15.0	0.819	5	7 34 57.59	2.2614	23 56 49.5	7.574
6	5 46 33.77	2.3237	27 20 21.5	0.964	6	7 37 13.19	2.2586	23 49 11.2	7.703
7	5 48 53.21	2.3243	27 19 19.3	1.109	7	7 39 28.62	2.2557	23 41 25.1	7.832
8	5 51 12.68	2.3248	27 18 8.4	1.255	8	7 41 43.88	2.2528	23 33 31.3	7.961
9	5 53 32.18	2.3252	27 16 48.7	1.401	9	7 43 58.96	2.2498	23 25 29.8	8.088
10	5 55 51.70	2.3254	27 15 20.3	1.546	10	7 46 13.86	2.2469	23 17 20.7	8.215
11	5 58 11.23	2.3256	27 13 43.2	1.691	11	7 48 28.59	2.2440	23 9 4.0	8.341
12	6 0 30.78	2.3258	27 11 57.4	1.836	12	7 50 43.14	2.2409	23 0 39.8	8.466
13	6 2 50.33	2.3258	27 10 2.9	1.982	13	7 52 57.50	2.2378	22 52 8.1	8.590
14	6 5 9.87	2.3257	27 7 59.6	2.127	14	7 55 11.68	2.2348	22 43 29.0	8.714
15	6 7 29.41	2.3256	27 5 47.6	2.272	15	7 57 25.68	2.2317	22 34 42.4	8.837
16	6 9 48.94	2.3253	27 3 26.9	2.417	16	7 59 39.49	2.2287	22 25 48.5	8.959
17	6 12 8.45	2.3249	27 0 57.5	2.563	17	8 1 53.12	2.2256	22 16 47.3	9.081
18	6 14 27.93	2.3244	26 58 19.3	2.708	18	8 4 6.56	2.2224	22 7 38.8	9.202
19	6 16 47.38	2.3239	26 55 32.5	2.852	19	8 6 19.81	2.2192	21 58 23.1	9.321
20	6 19 6.80	2.3234	26 52 37.0	2.997	20	8 8 32.87	2.2161	21 49 0.3	9.439
21	6 21 26.19	2.3227	26 49 32.8	3.142	21	8 10 45.74	2.2129	21 39 30.4	9.557
22	6 23 45.53	2.3218	26 46 20.0	3.286	22	8 12 58.42	2.2098	21 29 53.5	9.674
23	6 26 4.81	2.3209	26 42 58.5	3.431	23	8 15 10.91	2.2067	21 20 9.5	9.791
24	6 28 24.04	2.3200	N.26 39 28.3	3.575	24	8 17 23.22	2.2036	N.21 10 18.5	9.907

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 25.					FRIDAY 27.				
0	8 17 23.22	2.8036	N. 21 10 18.5	9.907	0	9 59 49.89	2.0791	N. 11 19 11.1	14.348
1	8 19 35.34	2.8003	21 0 20.6	10.028	1	10 1 54.60	2.0777	11 4 48.2	14.416
2	8 21 47.26	2.1970	20 50 15.9	10.135	2	10 3 59.22	2.0764	10 50 21.2	14.484
3	8 23 58.98	2.1938	20 40 4.4	10.248	3	10 6 3.76	2.0751	10 35 50.1	14.550
4	8 26 10.51	2.1907	20 29 46.2	10.360	4	10 8 8.23	2.0738	10 21 15.2	14.614
5	8 28 21.86	2.1876	20 19 21.2	10.478	5	10 10 12.62	2.0726	10 6 36.5	14.677
6	8 30 33.02	2.1844	20 8 49.6	10.588	6	10 12 16.94	2.0715	9 51 54.0	14.739
7	8 32 43.99	2.1812	19 58 11.4	10.691	7	10 14 21.20	2.0703	9 37 7.8	14.801
8	8 34 54.77	2.1781	19 47 26.7	10.799	8	10 16 25.40	2.0696	9 22 17.9	14.862
9	8 37 5.36	2.1748	19 36 35.5	10.907	9	10 18 29.55	2.0687	9 7 24.4	14.921
10	8 39 15.76	2.1718	19 25 37.8	11.014	10	10 20 33.65	2.0679	8 52 27.4	14.979
11	8 41 25.98	2.1687	19 14 33.8	11.119	11	10 22 37.70	2.0672	8 37 26.9	15.036
12	8 43 36.01	2.1657	19 3 23.5	11.224	12	10 24 41.71	2.0665	8 22 23.1	15.091
13	8 45 45.86	2.1627	18 52 6.9	11.328	13	10 26 45.68	2.0659	8 7 16.0	15.146
14	8 47 55.53	2.1596	18 40 44.1	11.431	14	10 28 49.62	2.0655	7 52 5.6	15.200
15	8 50 5.01	2.1565	18 29 15.2	11.533	15	10 30 53.54	2.0651	7 36 52.0	15.252
16	8 52 14.31	2.1536	18 17 40.2	11.634	16	10 32 57.43	2.0647	7 21 35.3	15.303
17	8 54 23.44	2.1507	18 5 59.1	11.735	17	10 35 1.30	2.0644	7 6 15.6	15.353
18	8 56 32.39	2.1477	17 54 12.0	11.834	18	10 37 5.16	2.0643	6 50 52.9	15.402
19	8 58 41.16	2.1448	17 42 19.0	11.932	19	10 39 9.01	2.0642	6 35 27.3	15.451
20	9 0 49.76	2.1419	17 30 20.1	12.029	20	10 41 12.86	2.0641	6 19 58.8	15.498
21	9 2 58.19	2.1391	17 18 15.5	12.125	21	10 43 16.70	2.0640	6 4 27.6	15.543
22	9 5 6.45	2.1362	17 6 5.1	12.221	22	10 45 20.54	2.0642	5 48 53.7	15.587
23	9 7 14.54	2.1334	N. 16 53 49.0	12.316	23	10 47 24.40	2.0645	N. 5 33 17.2	15.630
THURSDAY 26.					SATURDAY 28.				
0	9 9 22.46	2.1307	N. 16 41 27.2	12.409	0	10 49 28.28	2.0648	N. 5 17 38.1	15.672
1	9 11 30.22	2.1280	16 28 59.9	12.501	1	10 51 32.18	2.0652	5 1 56.5	15.713
2	9 13 37.82	2.1253	16 16 27.1	12.592	2	10 53 36.10	2.0656	4 46 12.5	15.754
3	9 15 45.26	2.1227	16 3 48.8	12.683	3	10 55 40.05	2.0661	4 30 26.2	15.790
4	9 17 52.55	2.1202	15 51 5.1	12.772	4	10 57 44.03	2.0667	4 14 37.7	15.827
5	9 19 59.68	2.1176	15 38 16.1	12.861	5	10 59 48.06	2.0673	3 58 46.9	15.864
6	9 22 6.66	2.1151	15 25 21.8	12.948	6	11 1 52.13	2.0683	3 42 54.0	15.898
7	9 24 13.49	2.1127	15 12 22.3	13.035	7	11 3 56.25	2.0692	3 26 59.1	15.932
8	9 26 20.18	2.1102	14 59 17.6	13.121	8	11 6 0.43	2.0702	3 11 2.2	15.964
9	9 28 26.72	2.1079	14 46 7.8	13.205	9	11 8 4.66	2.0711	2 55 3.4	15.995
10	9 30 33.12	2.1056	14 32 53.0	13.288	10	11 10 8.96	2.0722	2 39 2.8	16.025
11	9 32 39.39	2.1033	14 19 33.2	13.371	11	11 12 13.34	2.0736	2 23 0.4	16.053
12	9 34 45.52	2.1011	14 6 8.5	13.452	12	11 14 17.79	2.0748	2 6 56.4	16.080
13	9 36 51.52	2.0990	13 52 39.0	13.532	13	11 16 22.32	2.0762	1 50 50.8	16.106
14	9 38 57.40	2.0969	13 39 4.6	13.612	14	11 18 26.94	2.0776	1 34 43.7	16.130
15	9 41 3.15	2.0948	13 25 25.5	13.690	15	11 20 31.66	2.0794	1 18 35.2	16.153
16	9 43 8.78	2.0928	13 11 41.8	13.767	16	11 22 36.47	2.0810	1 2 25.3	16.175
17	9 45 14.29	2.0909	12 57 53.4	13.844	17	11 24 41.38	2.0827	0 46 14.2	16.195
18	9 47 19.69	2.0891	12 44 0.5	13.919	18	11 26 46.40	2.0846	0 30 1.9	16.214
19	9 49 24.98	2.0873	12 30 3.1	13.993	19	11 28 51.53	2.0866	N. 0 13 48.5	16.232
20	9 51 30.16	2.0855	12 16 1.3	14.067	20	11 30 56.79	2.0887	S. 0 2 26.0	16.249
21	9 53 35.24	2.0838	12 1 55.1	14.139	21	11 33 2.17	2.0908	0 18 41.4	16.264
22	9 55 40.22	2.0822	11 47 44.6	14.210	22	11 35 7.68	2.0929	0 34 57.7	16.277
23	9 57 45.10	2.0806	11 33 29.9	14.279	23	11 37 13.32	2.0952	0 51 14.7	16.289
24	9 59 49.89	2.0791	N. 11 19 11.1	14.348	24	11 39 19.10	2.0976	S. 1 7 32.4	16.300

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 29.					TUESDAY, DECEMBER 1.				
0	11 39 19.10	2.0976	S. 1 7 32.4	16.300	0	13 24 27.67	2.3156	S. 13 52 38.5	14.915
1	11 41 25.03	2.1001	1 23 50.7	16.310	<p>PHASES OF THE MOON.</p> <p> ● New Moon Nov. 4 19 27.0 ☾ First Quarter 11 17 40.6 ○ Full Moon 19 22 24.9 ☾ Last Quarter 27 14 43.7 </p>				
2	11 43 31.11	2.1027	1 40 9.6	16.318					
3	11 45 37.35	2.1054	1 56 28.9	16.324					
4	11 47 43.76	2.1081	2 12 48.5	16.329					
5	11 49 50.33	2.1109	2 29 8.4	16.333					
6	11 51 57.07	2.1138	2 45 28.5	16.336					
7	11 54 3.99	2.1169	3 1 48.7	16.336					
8	11 56 11.10	2.1201	3 18 8.8	16.334					
9	11 58 18.40	2.1233	3 34 28.8	16.332					
10	12 0 25.90	2.1266	3 50 48.6	16.328					
11	12 2 33.59	2.1299	4 7 8.2	16.323					
12	12 4 41.49	2.1335	4 23 27.4	16.316					
13	12 6 49.61	2.1371	4 39 46.1	16.307					
14	12 8 57.94	2.1407	4 56 4.3	16.297					
15	12 11 6.49	2.1444	5 12 21.8	16.285					
16	12 13 15.27	2.1483	5 28 38.5	16.272					
17	12 15 24.29	2.1522	5 44 54.4	16.257					
18	12 17 33.54	2.1563	6 1 9.3	16.240					
19	12 19 43.04	2.1604	6 17 23.2	16.222					
20	12 21 52.79	2.1646	6 33 35.9	16.202					
21	12 24 2.79	2.1688	6 49 47.4	16.180					
22	12 26 13.05	2.1732	7 5 57.5	16.157					
23	12 28 23.58	2.1777	S. 7 22 6.2	16.132					
MONDAY 30.					<p> ☾ Perigee Nov. 4 4.8 ☾ Apogee 16 21.5 </p>				
0	12 30 34.38	2.1823	S. 7 38 13.4	16.106					
1	12 32 45.46	2.1870	7 54 18.9	16.077					
2	12 34 56.82	2.1917	8 10 22.6	16.047					
3	12 37 8.46	2.1964	8 26 24.5	16.015					
4	12 39 20.39	2.2013	8 42 24.4	15.981					
5	12 41 32.62	2.2064	8 58 22.2	15.945					
6	12 43 45.16	2.2115	9 14 17.8	15.908					
7	12 45 58.00	2.2166	9 30 11.2	15.869					
8	12 48 11.15	2.2219	9 46 2.1	15.828					
9	12 50 24.62	2.2272	10 1 50.5	15.785					
10	12 52 38.41	2.2325	10 17 36.3	15.741					
11	12 54 52.52	2.2379	10 33 19.4	15.694					
12	12 57 6.96	2.2435	10 48 59.6	15.646					
13	12 59 21.74	2.2491	11 4 36.9	15.596					
14	13 1 36.86	2.2548	11 20 11.1	15.543					
15	13 3 52.32	2.2606	11 35 42.1	15.489					
16	13 6 8.13	2.2665	11 51 9.8	15.433					
17	13 8 24.30	2.2724	12 6 34.1	15.375					
18	13 10 40.82	2.2783	12 21 54.8	15.315					
19	13 12 57.70	2.2844	12 37 11.9	15.253					
20	13 15 14.95	2.2906	12 52 25.2	15.190					
21	13 17 32.57	2.2968	13 7 34.7	15.124					
22	13 19 50.56	2.3030	13 22 40.1	15.056					
23	13 22 8.93	2.3092	13 37 41.4	14.987					
24	13 24 27.67	2.3156	S. 13 52 38.5	14.915					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	Aldebaran	W.	97 34 30	2266	99 21 19	2252	101 8 29	2238	102 56 0	2224
	MARS	W.	76 48 47	2204	78 37 8	2188	80 25 54	2172	82 15 3	2157
	Pollux	W.	54 59 19	2212	56 47 29	2195	58 36 4	2180	60 25 2	2165
	SUN	E.	53 26 39	2533	51 46 11	2518	50 5 23	2503	48 24 14	2489
2	Aldebaran	W.	111 58 23	2166	113 47 42	2156	115 37 16	2148	117 27 2	2140
	MARS	W.	91 26 24	2088	93 17 42	2075	95 9 19	2063	97 1 15	2052
	Pollux	W.	69 35 22	2096	71 26 27	2084	73 17 51	2072	75 9 33	2062
	Regulus	W.	32 36 1	2085	34 27 23	2073	36 19 3	2062	38 11 1	2052
	SUN	E.	39 53 52	2499	38 10 59	2419	36 27 52	2412	34 44 34	2404
6	SUN	W.	17 32 26	2525	19 13 5	2511	20 54 3	2503	22 35 12	2500
	α Aquilæ	E.	65 57 21	2891	64 24 51	2929	62 53 9	2970	61 22 19	3015
	Fomalhaut	E.	89 6 33	2383	87 22 34	2396	85 38 53	2409	83 55 31	2424
	α Pegasi	E.	111 1 55	2266	109 15 6	2273	107 28 27	2281	105 41 59	2289
7	SUN	W.	31 0 30	2530	32 41 2	2542	34 21 17	2554	36 1 15	2569
	Fomalhaut	E.	75 24 37	2517	73 43 48	2540	72 3 31	2564	70 23 47	2589
	α Pegasi	E.	96 53 23	2348	95 8 34	2364	93 24 7	2379	91 40 2	2395
8	SUN	W.	44 15 53	2650	45 53 40	2668	47 31 3	2687	49 8 1	2704
	Fomalhaut	E.	62 14 16	2736	60 38 24	2769	59 3 16	2805	57 28 55	2844
	α Pegasi	E.	83 5 42	2486	81 24 9	2507	79 43 5	2527	78 2 29	2548
9	SUN	W.	57 6 32	2803	58 40 56	2822	60 14 55	2842	61 48 28	2862
	VENUS	W.	25 20 40	2887	26 53 15	2905	28 25 27	2924	29 57 16	2942
	Fomalhaut	E.	49 50 10	3065	48 21 18	3118	46 53 36	3175	45 26 51	3236
	α Pegasi	E.	69 47 3	2662	68 9 32	2687	66 32 34	2711	64 56 9	2736
	α Arietis	E.	111 42 54	2466	110 0 53	2484	108 19 17	2503	106 38 8	2521
10	SUN	W.	69 29 48	2962	71 0 49	2981	72 31 25	3001	74 1 37	3019
	VENUS	W.	37 30 27	3037	38 59 54	3056	40 28 58	3074	41 57 39	3093
	α Pegasi	E.	57 2 39	2873	55 29 45	2902	53 57 29	2932	52 25 51	2963
	α Arietis	E.	98 18 49	2614	96 40 13	2632	95 2 2	2650	93 24 15	2669
11	SUN	W.	81 26 51	3111	82 54 47	3129	84 22 21	3146	85 49 35	3163
	VENUS	W.	49 15 25	3184	50 41 53	3202	52 8 0	3219	53 33 47	3235
	α Arietis	E.	85 21 14	2753	83 45 45	2769	82 10 37	2786	80 35 51	2801
	Aldebaran	E.	117 3 2	2823	115 29 4	2838	113 55 25	2852	112 22 4	2865
12	SUN	W.	93 0 52	3242	94 26 12	3255	95 51 16	3270	97 16 3	3283
	VENUS	W.	60 37 58	3313	62 1 54	3327	63 25 34	3342	64 48 57	3355
	α Arietis	E.	72 46 56	2875	71 14 5	2888	69 41 31	2901	68 9 14	2914
	Aldebaran	E.	104 39 35	2931	103 7 55	2942	101 36 30	2954	100 5 20	2966
	MARS	E.	124 57 52	2810	123 23 37	2822	121 49 38	2834	120 15 54	2845
13	SUN	W.	104 16 9	3345	105 39 28	3357	107 2 34	3367	108 25 28	3377
	VENUS	W.	71 42 12	3416	73 4 10	3427	74 25 56	3437	75 47 31	3447
	α Aquilæ	W.	43 53 40	4628	44 55 41	4550	45 58 49	4479	47 3 0	4414
	α Arietis	E.	60 31 44	2973	59 0 58	2984	57 30 25	2994	56 0 5	3004
	Aldebaran	E.	92 33 4	3020	91 3 16	3030	89 33 41	3040	88 4 18	3049
	MARS	E.	112 30 46	2897	110 58 23	2905	109 26 11	2914	107 54 10	2922

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	Aldebaran W.	104 43 52	2211	106 32 3	2199	108 20 32	2187	110 9 19	2176
	MARS W.	84 4 36	2142	85 54 31	2128	87 44 48	2114	89 35 26	2101
	Pollux W.	62 14 23	2150	64 4 6	2136	65 54 11	2122	67 44 36	2109
	SUN E.	46 42 46	2476	45 0 59	2462	43 18 53	2450	41 36 30	2440
2	Aldebaran W.	119 17 0	2134	121 7 8	2128	122 57 25	2123	124 47 49	2119
	MARS W.	98 53 28	2041	100 45 58	2032	102 38 43	2022	104 31 43	2014
	Pollux W.	77 1 31	2052	78 53 45	2041	80 46 15	2032	82 38 59	2025
	Regulus W.	40 3 15	2041	41 55 45	2031	43 48 31	2022	45 41 31	2014
	SUN E.	33 1 5	2398	31 17 28	2395	29 33 46	2393	27 50 1	2393
6	SUN W.	24 16 25	2500	25 57 38	2504	27 38 45	2510	29 19 44	2520
	α Aquilæ E.	59 52 25	3065	58 23 32	3118	56 55 44	3174	55 29 4	3236
	Fomalhaut E.	82 12 31	2441	80 29 54	2458	78 47 41	2477	77 5 55	2497
	α Pegasi E.	103 55 44	2300	102 9 44	2310	100 23 59	2322	98 38 32	2335
7	SUN W.	37 40 53	2583	39 20 11	2599	40 59 8	2615	42 37 42	2632
	Fomalhaut E.	68 44 37	2616	67 6 4	2643	65 28 8	2672	63 50 51	2704
	α Pegasi E.	89 56 20	2412	88 13 2	2429	86 30 9	2448	84 47 42	2467
8	SUN W.	50 44 35	2724	52 20 43	2744	53 56 25	2763	55 31 41	2782
	Fomalhaut E.	55 55 24	2883	54 22 43	2925	52 50 56	2969	51 20 4	3015
	α Pegasi E.	76 22 23	2570	74 42 47	2592	73 3 41	2615	71 25 6	2638
9	SUN W.	63 21 35	2883	64 54 16	2903	66 26 32	2923	67 58 22	2942
	VENUS W.	31 28 41	2961	32 59 43	2980	34 30 21	2998	36 0 36	3018
	Fomalhaut E.	44 1 24	3300	42 37 13	3372	41 14 24	3447	39 53 1	3530
	α Pegasi E.	63 20 17	2763	61 45 0	2788	60 10 17	2816	58 36 10	2844
	α Arietis E.	104 57 24	2540	103 17 7	2559	101 37 15	2577	99 57 49	2596
10	SUN W.	75 31 26	3038	77 0 52	3057	78 29 54	3075	79 58 34	3094
	VENUS W.	43 25 57	3112	44 53 52	3130	46 21 25	3148	47 48 36	3167
	α Pegasi E.	50 54 52	2996	49 24 34	3029	47 54 57	3065	46 26 4	3101
	α Arietis E.	91 46 53	2686	90 9 54	2703	88 33 18	2720	86 57 5	2737
11	SUN W.	87 16 29	3179	88 43 3	3195	90 9 18	3211	91 35 14	3226
	VENUS W.	54 59 15	3252	56 24 23	3267	57 49 13	3283	59 13 44	3298
	α Arietis E.	79 1 25	2817	77 27 19	2832	75 53 33	2846	74 20 5	2861
	Aldebaran E.	110 49 0	2578	109 16 13	2592	107 43 44	2605	106 11 31	2618
12	SUN W.	98 40 34	3297	100 4 49	3309	101 28 50	3322	102 52 36	3333
	VENUS W.	66 12 5	3368	67 34 58	3381	68 57 36	3393	70 20 1	3405
	α Arietis E.	66 37 13	2927	65 5 28	2939	63 33 59	2950	62 2 44	2962
	Aldebaran E.	98 34 25	2977	97 3 44	2989	95 33 17	3000	94 3 4	3010
	MARS E.	118 42 25	2856	117 9 10	2867	115 36 9	2877	114 3 21	2887
13	SUN W.	109 48 11	3387	111 10 42	3396	112 33 3	3405	113 55 14	3414
	VENUS W.	77 8 54	3456	78 30 7	3466	79 51 9	3474	81 12 2	3482
	α Aquilæ W.	48 8 9	4355	49 14 11	4301	50 21 3	4252	51 28 40	4209
	α Arietis E.	54 29 57	3014	53 0 1	3023	51 30 17	3032	50 0 44	3041
	Aldebaran E.	86 35 6	3058	85 6 5	3066	83 37 14	3074	82 8 33	3082
	MARS E.	106 22 19	2930	104 50 38	2938	103 19 7	2944	101 47 44	2951

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
14	SUN W.	115 17 15	3422	116 39 7	3430	118 0 50	3437	119 22 25	3444
	VENUS W.	82 32 46	3489	83 53 22	3497	85 13 49	3504	86 34 9	3511
	α Aquilæ W.	52 36 58	4167	53 45 55	4131	54 55 27	4097	56 5 32	4065
	α Arietis E.	48 31 22	3049	47 2 10	3057	45 33 8	3065	44 4 16	3073
	Aldebaran E.	80 40 2	3090	79 11 40	3097	77 43 27	3104	76 15 22	3111
	MARS E.	100 16 30	2957	98 45 23	2965	97 14 24	2968	95 43 31	2973
15	VENUS W.	93 14 14	3535	94 34 0	3539	95 53 41	3542	97 13 19	3545
	α Aquilæ W.	62 2 54	3941	63 15 32	3921	64 28 30	3904	65 41 46	3886
	Aldebaran E.	68 56 54	3140	67 29 33	3145	66 2 18	3150	64 35 9	3155
	MARS E.	88 10 32	2993	86 40 10	2995	85 9 51	2997	83 39 35	2999
	Pollux E.	111 19 30	3073	109 50 48	3076	108 22 9	3079	106 53 34	3082
16	VENUS W.	103 50 49	3554	105 10 14	3554	106 29 39	3555	107 49 3	3555
	α Aquilæ W.	71 52 3	3819	73 6 46	3807	74 21 41	3796	75 36 47	3788
	Fomalhaut W.	45 57 18	3758	47 13 4	3727	48 29 23	3698	49 46 12	3671
	Aldebaran E.	57 20 48	3177	55 54 11	3181	54 27 39	3185	53 1 12	3190
	MARS E.	76 8 43	3004	74 38 35	3005	73 8 28	3004	71 38 20	3004
	Pollux E.	99 31 16	3089	98 2 53	3090	96 34 31	3090	95 6 9	3091
17	α Aquilæ W.	81 54 29	3749	83 10 24	3744	84 26 25	3739	85 42 31	3733
	Fomalhaut W.	56 16 45	3565	57 35 57	3547	58 55 29	3531	60 15 19	3516
	Aldebaran E.	45 50 19	3214	44 24 26	3220	42 58 40	3226	41 33 2	3234
	MARS E.	64 7 25	2997	62 37 9	2995	61 6 50	2993	59 36 28	2990
	Pollux E.	87 44 15	3086	86 15 48	3085	84 47 20	3083	83 18 50	3081
18	α Aquilæ W.	92 4 9	3718	93 20 37	3716	94 37 7	3716	95 53 37	3715
	Fomalhaut W.	66 58 25	3450	68 19 45	3439	69 41 17	3428	71 3 2	3418
	α Pegasi W.	44 40 27	3440	46 1 58	3418	47 23 54	3397	48 46 14	3377
	MARS E.	52 3 47	2975	50 33 3	2971	49 2 14	2968	47 31 21	2963
	Pollux E.	75 55 36	3068	74 26 47	3065	72 57 55	3062	71 28 59	3059
	Regulus E.	112 49 57	3056	111 20 54	3052	109 51 46	3049	108 22 34	3046
19	Fomalhaut W.	77 54 30	3373	79 17 17	3365	80 40 14	3357	82 3 20	3350
	α Pegasi W.	55 43 2	3297	57 7 17	3283	58 31 48	3270	59 56 35	3258
	MARS E.	39 55 35	2942	38 24 9	2938	36 52 38	2933	35 21 1	2928
	Pollux E.	64 3 13	3039	62 33 49	3035	61 4 20	3031	59 34 46	3026
	Regulus E.	100 55 24	3025	99 25 42	3020	97 55 54	3016	96 26 1	3010
	JUPITER E.	110 39 41	3067	109 10 51	3062	107 41 55	3057	106 12 53	3052
20	Fomalhaut W.	89 0 47	3319	90 24 37	3313	91 48 34	3307	93 12 37	3303
	α Pegasi W.	67 3 58	3202	68 30 5	3191	69 56 25	3181	71 22 57	3172
	Pollux E.	52 5 33	3005	50 35 26	3000	49 5 13	2995	47 34 54	2990
	Regulus E.	88 54 58	2984	87 24 25	2979	85 53 46	2973	84 23 0	2968
	JUPITER E.	98 46 6	3025	97 16 24	3019	95 46 35	3014	94 16 39	3008
21	Fomalhaut W.	100 14 3	3285	101 38 32	3282	103 3 4	3281	104 27 38	3279
	α Pegasi W.	78 38 20	3128	80 5 56	3119	81 33 42	3111	83 1 38	3104
	α Arietis W.	35 29 11	2985	36 59 42	2975	38 30 26	2965	40 1 22	2957
	Pollux E.	40 1 53	2963	38 31 0	2964	37 0 2	2960	35 28 59	2956
	Regulus E.	76 47 18	2937	75 15 46	2931	73 44 6	2924	72 12 18	2918
	JUPITER E.	86 45 6	2976	85 14 23	2970	83 43 33	2963	82 12 34	2957

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
14	SUN W.	120 43 52	3450	122 5 12	3456	123 26 25	3462	124 47 32	3467
	VENUS W.	87 54 21	3516	89 14 27	3521	90 34 28	3525	91 54 24	3531
	α Aquilæ W.	57 16 8	4036	58 27 12	4010	59 38 42	3984	60 50 37	3982
	α Arietis E.	42 35 33	3080	41 6 59	3087	39 38 34	3095	38 10 18	3102
	Aldebaran E.	74 47 26	3117	73 19 37	3124	71 51 56	3129	70 24 22	3134
	MARS E.	94 12 45	2977	92 42 4	2982	91 11 29	2985	89 40 58	2989
15	VENUS W.	98 32 54	3547	99 52 26	3550	101 11 55	3551	102 31 23	3553
	α Aquilæ W.	66 55 20	3870	68 9 10	3856	69 23 14	3843	70 37 32	3830
	Aldebaran E.	63 8 6	3160	61 41 9	3164	60 14 17	3168	58 47 30	3173
	MARS E.	82 9 21	3001	80 39 10	3002	79 9 0	3003	77 38 51	3004
	Pollux E.	105 25 2	3083	103 56 32	3086	102 28 5	3087	100 59 40	3088
16	VENUS W.	109 8 27	3554	110 27 52	3554	111 47 17	3553	113 6 43	3552
	α Aquilæ W.	76 52 2	3778	78 7 27	3770	79 23 0	3763	80 38 41	3756
	Fomalhaut W.	51 3 30	3647	52 21 14	3624	53 39 22	3603	54 57 53	3584
	Aldebaran E.	51 34 51	3194	50 8 35	3198	48 42 24	3204	47 16 19	3208
	MARS E.	70 8 12	3003	68 38 3	3001	67 7 52	3000	65 37 39	2999
	Pollux E.	93 37 48	3090	92 9 26	3089	90 41 3	3089	89 12 40	3087
17	α Aquilæ W.	86 58 43	3729	88 14 59	3726	89 31 19	3722	90 47 43	3720
	Fomalhaut W.	61 35 25	3501	62 55 48	3488	64 16 26	3474	65 37 19	3463
	Aldebaran E.	40 7 33	3242	38 42 14	3231	37 17 5	3228	35 52 9	3223
	MARS E.	58 6 3	2988	56 35 35	2985	55 5 3	2981	53 34 27	2978
	Pollux E.	81 50 17	3079	80 21 42	3076	78 53 3	3073	77 24 21	3071
18	α Aquilæ W.	97 10 8	3716	98 26 38	3717	99 43 7	3719	100 59 34	3722
	Fomalhaut W.	72 24 58	3408	73 47 5	3399	75 9 23	3389	76 31 52	3381
	α Pegasi W.	50 8 57	3359	51 32 0	3342	52 55 23	3326	54 19 4	3318
	MARS E.	46 0 22	2959	44 29 18	2955	42 58 9	2951	41 26 55	2946
	Pollux E.	69 59 59	3055	68 30 54	3052	67 1 45	3047	65 32 31	3044
	Regulus E.	106 53 18	3042	105 23 57	3038	103 54 31	3034	102 25 0	3030
19	Fomalhaut W.	83 26 34	3343	84 49 56	3336	86 13 26	3330	87 37 3	3324
	α Pegasi W.	61 21 36	3245	62 46 52	3234	64 12 21	3223	65 38 3	3212
	MARS E.	33 49 18	2924	32 17 29	2920	30 45 35	2915	29 13 35	2909
	Pollux E.	58 5 6	3022	56 35 21	3018	55 5 31	3014	53 35 35	3009
	Regulus E.	94 56 1	3005	93 25 55	3001	91 55 43	2995	90 25 24	2989
	JUPITER E.	104 43 45	3047	103 14 30	3042	101 45 9	3036	100 15 41	3030
20	Fomalhaut W.	94 36 45	3299	96 0 58	3294	97 25 16	3291	98 49 38	3288
	α Pegasi W.	72 49 40	3163	74 16 34	3153	75 43 39	3145	77 10 54	3136
	Pollux E.	46 4 29	2985	44 33 58	2981	43 3 22	2977	41 32 40	2973
	Regulus E.	82 52 7	2962	81 21 6	2956	79 49 58	2950	78 18 42	2943
	JUPITER E.	92 46 36	3001	91 16 25	2996	89 46 7	2989	88 15 40	2983
21	Fomalhaut W.	105 52 14	3278	107 16 51	3277	108 41 29	3277	110 6 7	3278
	α Pegasi W.	84 29 43	3096	85 57 57	3088	87 26 21	3081	88 54 54	3073
	α Arietis W.	41 32 29	2947	43 3 48	2939	44 35 18	2930	46 6 59	2921
	Pollux E.	33 57 51	2953	32 26 39	2950	30 55 24	2947	29 24 5	2946
	Regulus E.	70 40 22	2911	69 8 17	2904	67 36 3	2898	66 3 41	2891
	JUPITER E.	80 41 27	2950	79 10 11	2943	77 38 47	2936	76 7 14	2928

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LUNAR DISTANCES.									
Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
22	α Pegasi W.	90 23 36	3067	91 52 26	3060	93 21 25	3053	94 50 32	3046
	α Arietis W.	47 38 51	2912	49 10 54	2904	50 43 8	2895	52 15 33	2887
	Regulus E.	64 31 10	2883	62 58 30	2876	61 25 41	2869	59 52 42	2862
	JUPITER E.	74 35 31	2922	73 3 40	2914	71 31 39	2907	69 59 29	2900
	Spica E.	118 33 17	2887	117 0 42	2880	115 27 57	2873	113 55 3	2865
23	α Arietis W.	60 0 23	2843	61 33 55	2835	63 7 38	2826	64 41 32	2817
	Aldebaran W.	29 19 34	3112	30 47 29	3077	32 16 7	3047	33 45 22	3018
	Regulus E.	52 5 24	2823	50 31 26	2815	48 57 18	2807	47 22 59	2799
	JUPITER E.	62 16 14	2861	60 43 5	2852	59 9 45	2845	57 36 15	2836
	Spica E.	106 8 3	2825	104 34 8	2818	103 0 3	2809	101 25 47	2801
24	α Arietis W.	72 34 0	2771	74 9 6	2761	75 44 25	2752	77 19 56	2742
	Aldebaran W.	41 19 20	2910	42 51 26	2891	44 23 56	2873	45 56 49	2857
	Regulus E.	39 28 41	2756	37 53 15	2747	36 17 37	2738	34 41 47	2729
	JUPITER E.	49 46 0	2793	48 11 23	2785	46 36 35	2775	45 1 34	2766
	Spica E.	93 31 38	2756	91 56 13	2747	90 20 36	2738	88 44 47	2729
	SUN E.	133 45 3	3143	132 17 46	3132	130 50 15	3120	129 22 30	3110
25	α Arietis W.	85 20 50	2692	86 57 41	2681	88 34 47	2670	90 12 7	2659
	Aldebaran W.	53 46 25	2780	55 21 19	2765	56 56 33	2750	58 32 6	2737
	MARS W.	36 11 1	2577	37 50 27	2566	39 30 9	2554	41 10 7	2543
	Spica E.	80 42 27	2679	79 5 19	2668	77 27 56	2657	75 50 19	2647
	SUN E.	122 0 17	3051	120 31 7	3039	119 1 42	3026	117 32 2	3014
26	α Arietis W.	98 22 30	2603	100 1 21	2592	101 40 27	2580	103 19 49	2568
	Aldebaran W.	66 34 25	2668	68 11 48	2655	69 49 29	2640	71 27 29	2627
	MARS W.	49 33 55	2485	51 15 30	2472	52 57 23	2460	54 39 32	2448
	Spica E.	67 38 34	2591	65 59 27	2580	64 20 4	2568	62 40 25	2556
	SUN E.	109 59 49	2951	108 28 35	2938	106 57 4	2924	105 25 16	2912
27	Aldebaran W.	79 42 3	2560	81 21 53	2547	83 2 1	2533	84 42 28	2520
	MARS W.	63 14 44	2385	64 58 40	2372	66 42 55	2359	68 27 29	2346
	Pollux W.	36 59 57	2523	38 40 38	2508	40 21 40	2493	42 3 3	2479
	Spica E.	54 18 0	2495	52 36 40	2483	50 55 3	2470	49 13 8	2458
	SUN E.	97 42 3	2843	96 8 31	2830	94 34 42	2816	93 0 35	2801
28	Aldebaran W.	93 9 17	2455	94 51 34	2442	96 34 9	2429	98 17 2	2417
	MARS W.	77 15 2	2281	79 1 30	2267	80 48 18	2254	82 35 25	2241
	Pollux W.	50 35 6	2406	52 18 32	2392	54 2 18	2378	55 46 24	2364
	Spica E.	40 39 7	2195	38 55 25	2183	37 11 26	2171	35 27 10	2159
	SUN E.	85 5 21	2732	83 29 23	2717	81 53 6	2703	80 16 30	2689
29	MARS W.	91 35 52	2176	93 24 55	2164	95 14 17	2151	97 3 58	2139
	Pollux W.	64 31 51	2297	66 17 55	2285	68 4 17	2271	69 50 59	2259
	Regulus W.	27 31 12	2287	29 17 30	2274	31 4 8	2261	32 51 5	2248
	SUN E.	72 8 52	2621	70 30 25	2607	68 51 40	2595	67 12 38	2582
30	Pollux W.	78 48 59	2200	80 37 27	2189	82 26 11	2178	84 15 11	2168
	Regulus W.	41 50 25	2189	43 39 9	2178	45 28 10	2168	47 17 26	2157
	JUPITER W.	31 10 44	2228	32 58 30	2215	34 46 35	2203	36 34 58	2192
	SUN E.	58 53 9	2522	57 12 26	2512	55 31 29	2501	53 50 17	2491

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
22	α Pegasi W.	96 19 48	3039	97 49 12	3034	99 18 43	3027	100 48 22	3022
	α Arietis W.	53 48 9	2878	55 20 56	2869	56 53 54	2861	58 27 3	2852
	Regulus E.	58 19 34	2854	56 46 16	2847	55 12 49	2839	53 39 12	2831
	JUPITER E.	68 27 10	2892	66 54 41	2884	65 22 2	2876	63 49 13	2869
	Spica E.	112 21 59	2857	110 48 45	2849	109 15 21	2842	107 41 47	2834
23	α Arietis W.	66 15 38	2808	67 49 56	2799	69 24 25	2790	70 59 6	2780
	Aldebaran W.	35 15 12	2993	36 45 33	2971	38 16 22	2950	39 47 38	2929
	Regulus E.	45 48 30	2791	44 13 50	2782	42 38 58	2773	41 3 55	2765
	JUPITER E.	56 2 34	2828	54 28 42	2819	52 54 39	2811	51 20 25	2802
	Spica E.	99 51 20	2792	98 16 42	2783	96 41 52	2775	95 6 51	2766
24	α Arietis W.	78 55 40	2732	80 31 37	2722	82 7 48	2712	83 44 12	2702
	Aldebaran W.	47 30 3	2841	49 3 38	2825	50 37 34	2809	52 11 50	2795
	Regulus E.	33 5 45	2719	31 29 30	2710	29 53 3	2700	28 16 23	2690
	JUPITER E.	43 26 22	2757	41 50 58	2747	40 15 21	2738	38 39 32	2729
	Spica E.	87 8 45	2719	85 32 31	2709	83 56 3	2699	82 19 22	2689
	SUN E.	127 54 32	3098	126 26 20	3086	124 57 53	3074	123 29 12	3063
25	α Arietis W.	91 49 42	2648	93 27 32	2638	95 5 36	2626	96 43 55	2615
	Aldebaran W.	60 7 57	2723	61 44 6	2709	63 20 34	2695	64 57 20	2681
	MARS W.	42 50 20	2532	44 30 49	2520	46 11 35	2508	47 52 37	2497
	Spica E.	74 12 28	2636	72 34 22	2625	70 56 1	2614	69 17 25	2603
	SUN E.	116 2 7	3001	114 31 56	2989	113 1 30	2976	111 30 47	2964
26	α Arietis W.	104 59 28	2556	106 39 23	2544	108 19 35	2533	110 0 3	2520
	Aldebaran W.	73 5 47	2614	74 44 23	2600	76 23 18	2587	78 2 31	2573
	MARS W.	56 21 59	2435	58 4 44	2423	59 47 46	2410	61 31 6	2398
	Spica E.	61 0 29	2544	59 20 17	2532	57 39 48	2520	55 59 3	2507
	SUN E.	103 53 12	2898	102 20 51	2884	100 48 12	2871	99 15 16	2858
27	Aldebaran W.	86 23 13	2507	88 4 16	2494	89 45 38	2481	91 27 18	2467
	MARS W.	70 12 21	2333	71 57 32	2320	73 43 3	2307	75 28 53	2294
	Pollux W.	43 44 46	2464	45 26 50	2449	47 9 15	2435	48 52 0	2420
	Spica E.	47 30 55	2445	45 48 25	2433	44 5 37	2420	42 22 31	2408
	SUN E.	91 26 9	2788	89 51 25	2773	88 16 22	2760	86 41 1	2745
28	Aldebaran W.	100 0 12	2405	101 43 40	2393	103 27 25	2381	105 11 27	2369
	MARS W.	84 22 52	2228	86 10 38	2215	87 58 43	2202	89 47 8	2189
	Pollux W.	57 30 50	2350	59 15 36	2337	61 0 41	2324	62 46 6	2310
	Spica E.	33 42 36	2347	31 57 45	2336	30 12 38	2324	28 27 14	2313
	SUN E.	78 39 36	2675	77 2 23	2661	75 24 51	2648	73 47 1	2634
29	MARS W.	98 53 57	2127	100 44 15	2116	102 34 50	2104	104 25 43	2093
	Pollux W.	71 37 59	2246	73 25 18	2235	75 12 54	2223	77 0 48	2211
	Regulus W.	34 38 21	2236	36 25 55	2223	38 13 48	2212	40 1 58	2200
	SUN E.	65 33 18	2569	63 53 41	2557	62 13 47	2545	60 33 36	2533
30	Pollux W.	86 4 27	2159	87 53 57	2149	89 43 42	2140	91 33 40	2132
	Regulus W.	49 6 58	2147	50 56 45	2138	52 46 46	2130	54 37 0	2122
	JUPITER W.	38 23 38	2130	40 12 35	2170	42 1 47	2161	43 51 14	2151
	SUN E.	52 8 51	2482	50 27 12	2472	48 45 20	2464	47 3 16	2457

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.		Added to Apparent Time.		
Tues.	1	h m s 16 32 46.35	s 10.823	° ' " S.21 56 26.8	" -22.51	' " 16 16.02	s 70.34	m s 10 33.58	s 0.963	
Wed.	2	16 37 6.42	10.849	22 5 14.4	21.45	16 16.16	70.42	10 10.14	0.989	
Thur.	3	16 41 27.10	10.874	22 13 36.3	20.38	16 16.30	70.50	9 46.08	1.015	
Frid.	4	16 45 48.37	10.898	22 21 32.4	-19.30	16 16.44	70.58	9 21.44	1.039	
Sat.	5	16 50 10.20	10.921	22 29 2.4	18.20	16 16.57	70.65	8 56.23	1.061	
SUN.	6	16 54 32.56	10.942	22 36 5.9	17.09	16 16.70	70.72	8 30.50	1.082	
Mon.	7	16 58 55.42	10.962	22 42 42.9	-15.98	16 16.83	70.79	8 4.27	1.103	
Tues.	8	17 3 18.75	10.981	22 48 53.0	14.86	16 16.95	70.85	7 37.58	1.122	
Wed.	9	17 7 42.51	10.998	22 54 36.1	13.73	16 17.07	70.91	7 10.45	1.139	
Thur.	10	17 12 6.67	11.014	22 59 52.0	-12.59	16 17.18	70.96	6 42.93	1.155	
Frid.	11	17 16 31.20	11.029	23 4 40.6	11.45	16 17.29	71.01	6 15.03	1.169	
Sat.	12	17 20 56.07	11.042	23 9 1.6	10.30	16 17.40	71.06	5 46.80	1.182	
SUN.	13	17 25 21.23	11.054	23 12 55.0	-9.15	16 17.50	71.10	5 18.27	1.195	
Mon.	14	17 29 46.68	11.065	23 16 20.6	7.99	16 17.60	71.14	4 49.46	1.206	
Tues.	15	17 34 12.36	11.075	23 19 18.4	6.82	16 17.69	71.17	4 20.42	1.215	
Wed.	16	17 38 38.26	11.083	23 21 48.1	-5.66	16 17.78	71.20	3 51.16	1.223	
Thur.	17	17 43 4.33	11.090	23 23 49.9	4.49	16 17.86	71.23	3 21.73	1.230	
Frid.	18	17 47 30.56	11.095	23 25 23.5	3.32	16 17.94	71.25	2 52.14	1.236	
Sat.	19	17 51 56.90	11.100	23 26 28.9	-2.14	16 18.01	71.26	2 22.43	1.240	
SUN.	20	17 56 23.34	11.103	23 27 6.1	-0.96	16 18.07	71.27	1 52.64	1.243	
Mon.	21	18 0 49.84	11.105	23 27 15.1	+0.22	16 18.12	71.28	1 22.78	1.245	
Tues.	22	18 5 16.37	11.106	23 26 55.8	+1.39	16 18.17	71.28	0 52.88	1.246	
Wed.	23	18 9 42.91	11.105	23 26 8.2	2.57	16 18.21	71.27	0 22.99	1.245	
Thur.	24	18 14 9.41	11.103	23 24 52.3	3.75	16 18.25	71.26	0 6.87	1.243	
Frid.	25	18 18 35.85	11.100	23 23 8.1	+4.93	16 18.28	71.25	0 36.67	1.240	
Sat.	26	18 23 2.20	11.095	23 20 55.7	6.10	16 18.31	71.23	1 6.38	1.235	
SUN.	27	18 27 28.42	11.089	23 18 15.2	7.28	16 18.33	71.21	1 35.96	1.229	
Mon.	28	18 31 54.48	11.081	23 15 6.5	+8.45	16 18.34	71.18	2 5.38	1.222	
Tues.	29	18 36 20.35	11.073	23 11 29.7	9.61	16 18.35	71.15	2 34.61	1.213	
Wed.	30	18 40 45.99	11.063	23 7 25.1	10.77	16 18.36	71.12	3 3.62	1.203	
Thur.	31	18 45 11.37	11.051	23 2 52.6	11.93	16 18.36	71.08	3 32.36	1.191	
Frid.	32	18 49 36.44	11.038	S.22 57 52.4	+13.08	16 18.36	71.03	4 0.80	1.178	

NOTE.—The mean time of semidiameter passing may be found by subtracting 0.19 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.									
Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.	
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.				
						Subtracted from Mean Time.			
Tues.	1	^h 16 ^m 32 ^s 48.26	10.820	S. 21° 56' 30.7"	-22.50	^m 10 ^s 33.41	0.963	^h 16 ^m 43 ^s 21.67	
Wed.	2	16 37 8.25	10.846	22 5 18.0	21.44	10 9.98	0.989	16 47 18.23	
Thur.	3	16 41 28.87	10.871	22 13 39.6	20.37	9 45.92	1.015	16 51 14.79	
Frid.	4	16 45 50.07	10.895	22 21 35.4	-19.28	9 21.28	1.038	16 55 11.35	
Sat.	5	16 50 11.83	10.918	22 29 5.1	18.18	8 56.07	1.061	16 59 7.90	
SUN.	6	16 54 34.11	10.939	22 36 8.3	17.08	8 30.35	1.082	17 3 4.46	
Mon.	7	16 58 56.90	10.959	22 42 45.0	-15.97	8 4.13	1.102	17 7 1.02	
Tues.	8	17 3 20.14	10.978	22 48 54.9	14.85	7 37.44	1.121	17 10 57.58	
Wed.	9	17 7 43.82	10.995	22 54 37.8	13.72	7 10.32	1.138	17 14 54.14	
Thur.	10	17 12 7.90	11.011	22 59 53.4	-12.58	6 42.80	1.154	17 18 50.70	
Frid.	11	17 16 32.34	11.026	23 4 41.8	11.44	6 14.91	1.169	17 22 47.26	
Sat.	12	17 20 57.13	11.039	23 9 2.6	10.29	5 46.69	1.182	17 26 43.82	
SUN.	13	17 25 22.21	11.050	23 12 55.8	-9.14	5 18.16	1.194	17 30 40.37	
Mon.	14	17 29 47.56	11.061	23 16 21.2	7.98	4 49.37	1.205	17 34 36.93	
Tues.	15	17 34 13.16	11.071	23 19 18.8	6.82	4 20.33	1.214	17 38 33.49	
Wed.	16	17 38 38.96	11.079	23 21 48.5	-5.65	3 51.09	1.222	17 42 30.05	
Thur.	17	17 43 4.95	11.086	23 23 50.1	4.48	3 21.66	1.229	17 46 26.61	
Frid.	18	17 47 31.08	11.092	23 25 23.6	3.31	2 52.08	1.235	17 50 23.17	
Sat.	19	17 51 57.34	11.096	23 26 29.0	-2.14	2 22.38	1.239	17 54 19.73	
SUN.	20	17 56 23.69	11.099	23 27 6.2	-0.96	1 52.60	1.242	17 58 16.29	
Mon.	21	18 0 50.10	11.101	23 27 15.1	+0.22	1 22.75	1.244	18 2 12.84	
Tues.	22	18 5 16.54	11.102	23 26 55.8	+1.39	0 52.87	1.244	18 6 9.40	
Wed.	23	18 9 42.98	11.101	23 26 8.2	2.57	0 22.99	1.244	18 10 5.96	
Thur.	24	18 14 9.38	11.099	23 24 52.3	3.75	0 6.86	1.242	18 14 2.52	
Frid.	25	18 18 35.73	11.095	23 23 8.2	+4.93	0 36.65	1.239	18 17 59.08	
Sat.	26	18 23 1.99	11.091	23 20 55.8	6.10	1 6.35	1.235	18 21 55.64	
SUN.	27	18 27 28.12	11.086	23 18 15.4	7.27	1 35.92	1.229	18 25 52.20	
Mon.	28	18 31 54.09	11.078	23 15 6.8	+8.44	2 5.34	1.222	18 29 48.76	
Tues.	29	18 36 19.87	11.069	23 11 30.2	9.61	2 34.56	1.213	18 33 45.31	
Wed.	30	18 40 45.42	11.059	23 7 25.6	10.77	3 3.55	1.203	18 37 41.87	
Thur.	31	18 45 10.72	11.048	23 2 53.3	11.93	3 32.28	1.191	18 41 38.43	
Frid.	32	18 49 35.70	11.034	S. 22° 57' 53.3"	+13.08	4 0.71	1.178	18 45 34.99	
NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.								Diff. for 1 Hour. +9'.8565. (Table III.)	

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.	
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
1	336	249 51 27.0	50 30.5	152.22	— 0.56	9.9937168	—26.6	h m s 7 15 26.80	
2	337	250 52 20.8	51 24.1	152.27	0.60	9.9936536	26.1	7 11 30.88	
3	338	251 53 15.8	52 18.9	152.32	0.60	9.9935917	25.5	7 7 34.97	
4	339	252 54 12.1	53 15.1	152.37	— 0.58	9.9935312	—24.9	7 3 39.06	
5	340	253 55 9.4	54 12.2	152.41	0.53	9.9934722	24.3	6 59 43.15	
6	341	254 56 7.6	55 10.2	152.44	0.44	9.9934144	23.7	6 55 47.23	
7	342	255 57 6.7	56 9.1	152.47	— 0.34	9.9933582	—23.1	6 51 51.32	
8	343	256 58 6.5	57 8.7	152.51	0.22	9.9933034	22.5	6 47 55.41	
9	344	257 59 7.0	58 9.1	152.54	— 0.10	9.9932502	21.8	6 43 59.50	
10	345	258 60 8.2	59 10.1	152.56	+ 0.03	9.9931987	—21.1	6 40 3.58	
11	346	260 1 9.9	0 11.6	152.58	0.15	9.9931492	20.3	6 36 7.67	
12	347	261 2 12.1	1 13.6	152.60	0.26	9.9931014	19.4	6 32 11.76	
13	348	262 3 14.6	2 15.9	152.61	+ 0.35	9.9930560	—18.5	6 28 15.84	
14	349	263 4 17.6	3 18.7	152.63	0.43	9.9930127	17.5	6 24 19.93	
15	350	264 5 21.0	4 21.9	152.65	0.47	9.9929718	16.5	6 20 24.02	
16	351	265 6 24.8	5 25.5	152.67	+ 0.49	9.9929335	—15.4	6 16 28.11	
17	352	266 7 29.0	6 29.5	152.68	0.47	9.9928978	14.3	6 12 32.19	
18	353	267 8 33.6	7 33.9	152.70	0.42	9.9928649	13.2	6 8 36.28	
19	354	268 9 38.6	8 38.7	152.72	+ 0.35	9.9928346	—12.0	6 4 40.37	
20	355	269 10 44.2	9 44.1	152.74	0.26	9.9928071	10.9	6 0 44.45	
21	356	270 11 50.1	10 49.8	152.76	+ 0.14	9.9927825	9.7	5 56 48.54	
22	357	271 12 56.7	11 56.2	152.78	0.00	9.9927607	— 8.5	5 52 52.63	
23	358	272 14 3.7	13 3.0	152.81	— 0.13	9.9927417	7.4	5 48 56.72	
24	359	273 15 11.2	14 10.3	152.83	0.26	9.9927253	6.3	5 45 0.80	
25	360	274 16 19.3	15 18.2	152.85	— 0.39	9.9927114	— 5.3	5 41 4.89	
26	361	275 17 28.0	16 26.7	152.87	0.50	9.9927000	4.3	5 37 8.98	
27	362	276 18 37.2	17 35.7	152.89	0.59	9.9926909	3.3	5 33 13.06	
28	363	277 19 46.8	18 45.1	152.91	— 0.66	9.9926843	— 2.4	5 29 17.15	
29	364	278 20 57.0	19 55.1	152.93	0.71	9.9926795	1.6	5 25 21.24	
30	365	279 22 7.4	21 5.3	152.94	0.72	9.9926767	— 0.8	5 21 25.33	
31	366	280 23 18.2	22 15.9	152.95	— 0.69	9.9926759	0.0	5 17 29.41	
32	367	281 24 29.2	23 26.7	152.96	— 0.64	9.9926767	+ 0.7	5 13 33.50	
NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 1 st .								Diff. for 1 Hour, —9 ^m .8296. (Table II.)	

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	16 29.2	16 32.0	60 24.0	+0.98	60 34.2	+0.71	21 28.9	2.39	26.2
2	16 33.9	16 34.6	60 41.0	+0.40	60 43.8	+0.07	22 28.5	2.57	27.2
3	16 34.3	16 32.8	60 42.6	-0.28	60 37.2	-0.63	23 31.9	2.69	28.2
4	16 30.2	16 26.5	60 27.6	-0.96	60 14.1	-1.28	6		29.2
5	16 21.8	16 16.3	59 56.9	1.56	59 36.6	1.80	0 36.7	2.68	0.8
6	16 10.1	16 3.2	59 13.6	2.00	58 48.5	2.15	1 39.7	2.55	1.8
7	15 56.0	15 48.7	58 22.1	-2.23	57 55.0	-2.27	2 38.3	2.33	2.8
8	15 41.2	15 33.9	57 27.7	2.26	57 0.8	2.20	3 31.5	2.10	3.8
9	15 26.8	15 20.1	56 34.8	2.11	56 10.1	1.98	4 19.6	1.91	4.8
10	15 13.9	15 8.1	55 47.2	-1.83	55 26.2	-1.65	5 3.6	1.77	5.8
11	15 3.0	14 58.6	55 7.5	1.46	54 51.2	1.25	5 45.0	1.69	6.8
12	14 54.9	14 51.8	54 37.4	1.04	54 26.2	0.83	6 24.9	1.65	7.8
13	14 49.4	14 47.8	54 17.5	-0.62	54 11.4	-0.40	7 4.7	1.67	8.8
14	14 46.8	14 46.5	54 7.8	-0.20	54 6.7	0.00	7 45.5	1.74	9.8
15	14 46.8	14 47.7	54 7.8	+0.18	54 11.0	+0.35	8 28.3	1.84	10.8
16	14 49.1	14 51.0	54 16.2	+0.51	54 23.2	+0.65	9 13.9	1.97	11.8
17	14 53.3	14 56.1	54 31.8	0.78	54 41.8	0.88	10 2.7	2.10	12.8
18	14 59.1	15 2.4	54 53.0	0.97	55 5.1	1.05	10 54.5	2.21	13.8
19	15 5.9	15 9.6	55 18.1	+1.11	55 31.7	+1.15	11 48.4	2.27	14.8
20	15 13.5	15 17.4	55 45.8	1.18	56 0.1	1.20	12 42.9	2.26	15.8
21	15 21.3	15 25.3	56 14.6	1.21	56 29.2	1.21	13 36.5	2.20	16.8
22	15 29.2	15 33.2	56 43.7	+1.21	56 58.2	+1.20	14 28.1	2.10	17.8
23	15 37.1	15 41.0	57 12.6	1.19	57 26.8	1.18	15 17.4	2.01	18.8
24	15 44.8	15 48.6	57 40.9	1.16	57 54.7	1.15	16 4.9	1.95	19.8
25	15 52.3	15 56.0	58 8.4	+1.13	58 21.8	+1.10	16 51.5	1.94	20.8
26	15 59.5	16 2.9	58 34.9	1.07	58 47.5	1.03	17 38.4	1.98	21.8
27	16 6.2	16 9.3	58 59.6	0.98	59 10.9	0.90	18 27.0	2.08	22.8
28	16 12.1	16 14.6	59 21.2	+0.81	59 30.3	+0.70	19 18.6	2.23	23.8
29	16 16.7	16 18.3	59 37.9	0.56	59 43.7	0.40	20 14.3	2.41	24.8
30	16 19.3	16 19.6	59 47.4	+0.21	59 48.8	+0.01	21 14.1	2.57	25.8
31	16 19.3	16 18.2	59 47.6	-0.22	59 43.6	-0.45	22 16.9	2.65	26.8
32	16 16.4	16 13.7	59 36.8	-0.69	59 27.1	-0.93	23 20.2	2.60	27.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 1.					THURSDAY 3.				
0	13 24 27.67	2.3156	S. 13 52 38.5	14.915	0	15 23 30.71	2.6421	S. 23 46 22.9	8.7
1	13 26 46.80	2.3221	14 7 31.2	14.841	1	15 26 9.35	2.6469	23 55 19.9	8.4
2	13 29 6.32	2.3286	14 22 19.4	14.765	2	15 28 48.34	2.6526	24 4 6.6	8.2
3	13 31 26.23	2.3351	14 37 3.0	14.687	3	15 31 27.66	2.6581	24 12 42.9	8.5
4	13 33 46.53	2.3417	14 51 41.9	14.607	4	15 34 7.31	2.6636	24 21 8.7	8.3
5	13 36 7.23	2.3483	15 6 15.9	14.525	5	15 36 47.29	2.6689	24 29 24.0	8.1
6	13 38 28.33	2.3551	15 20 44.9	14.441	6	15 39 27.58	2.6741	24 37 28.6	7.9
7	13 40 49.84	2.3618	15 35 8.8	14.355	7	15 42 8.18	2.6792	24 45 22.4	7.8
8	13 43 11.75	2.3686	15 49 27.5	14.267	8	15 44 49.08	2.6842	24 53 5.4	7.6
9	13 45 34.07	2.3754	16 3 40.9	14.177	9	15 47 30.28	2.6890	25 0 37.4	7.4
10	13 47 56.80	2.3823	16 17 48.8	14.084	10	15 50 11.76	2.6936	25 7 58.4	7.2
11	13 50 19.94	2.3892	16 31 51.0	13.989	11	15 52 53.51	2.6980	25 15 8.3	7.0
12	13 52 43.50	2.3962	16 45 47.5	13.892	12	15 55 35.52	2.7023	25 22 7.0	6.8
13	13 55 7.48	2.4032	16 59 38.1	13.794	13	15 58 17.79	2.7066	25 28 54.5	6.6
14	13 57 31.88	2.4101	17 13 22.8	13.694	14	16 1 0.31	2.7107	25 35 30.6	6.5
15	13 59 56.69	2.4170	17 27 1.4	13.591	15	16 3 43.07	2.7146	25 41 55.3	6.3
16	14 2 21.92	2.4241	17 40 33.7	13.485	16	16 6 26.06	2.7183	25 48 8.6	6.1
17	14 4 47.58	2.4312	17 53 59.6	13.378	17	16 9 9.27	2.7218	25 54 10.3	5.9
18	14 7 13.67	2.4383	18 7 19.1	13.269	18	16 11 52.68	2.7252	26 0 0.4	5.7
19	14 9 40.18	2.4454	18 20 31.9	13.157	19	16 14 36.29	2.7284	26 5 38.8	5.5
20	14 12 7.12	2.4525	18 33 38.0	13.044	20	16 17 20.09	2.7315	26 11 5.5	5.3
21	14 14 34.48	2.4596	18 46 37.2	12.928	21	16 20 4.07	2.7343	26 16 20.5	5.1
22	14 17 2.27	2.4667	18 59 29.4	12.811	22	16 22 48.21	2.7369	26 21 23.7	4.9
23	14 19 30.49	2.4738	S. 19 12 14.5	12.691	23	16 25 32.50	2.7394	S. 26 26 15.0	4.7
WEDNESDAY 2.					FRIDAY 4.				
0	14 21 59.13	2.4809	S. 19 24 52.3	12.569	0	16 28 16.94	2.7416	S. 26 30 54.3	4.5
1	14 24 28.20	2.4881	19 37 22.8	12.445	1	16 31 1.51	2.7438	26 35 21.7	4.3
2	14 26 57.70	2.4952	19 49 45.7	12.318	2	16 33 46.20	2.7457	26 39 37.1	4.1
3	14 29 27.62	2.5023	20 2 1.0	12.190	3	16 36 31.00	2.7474	26 43 40.5	3.9
4	14 31 57.97	2.5093	20 14 8.5	12.060	4	16 39 15.89	2.7489	26 47 31.8	3.7
5	14 34 28.74	2.5164	20 26 8.2	11.928	5	16 42 0.87	2.7508	26 51 11.0	3.5
6	14 36 59.94	2.5235	20 37 59.9	11.793	6	16 44 45.92	2.7523	26 54 38.0	3.3
7	14 39 31.56	2.5305	20 49 43.4	11.657	7	16 47 31.03	2.7528	26 57 52.9	3.1
8	14 42 3.60	2.5374	21 1 18.7	11.518	8	16 50 16.19	2.7530	27 0 55.6	2.9
9	14 44 36.05	2.5443	21 12 45.6	11.377	9	16 53 1.39	2.7535	27 3 46.2	2.7
10	14 47 8.92	2.5512	21 24 4.0	11.234	10	16 55 46.61	2.7537	27 6 24.6	2.5
11	14 49 42.20	2.5580	21 35 13.7	11.089	11	16 58 31.84	2.7538	27 8 50.7	2.3
12	14 52 15.88	2.5648	21 46 14.7	10.942	12	17 1 17.07	2.7537	27 11 4.6	2.1
13	14 54 49.97	2.5716	21 57 6.8	10.794	13	17 4 2.29	2.7534	27 13 6.3	1.9
14	14 57 24.47	2.5783	22 7 50.0	10.644	14	17 6 47.48	2.7528	27 14 55.8	1.7
15	14 59 59.37	2.5849	22 18 24.1	10.492	15	17 9 32.63	2.7521	27 16 33.0	1.5
16	15 2 34.66	2.5914	22 28 49.0	10.337	16	17 12 17.73	2.7511	27 17 58.0	1.3
17	15 5 10.34	2.5970	22 39 4.5	10.180	17	17 15 2.76	2.7499	27 19 10.9	1.1
18	15 7 46.42	2.6035	22 49 10.6	10.022	18	17 17 47.72	2.7486	27 20 11.6	0.9
19	15 10 22.88	2.6107	22 59 7.2	9.862	19	17 20 32.59	2.7470	27 21 0.1	0.7
20	15 12 59.71	2.6169	23 8 54.1	9.700	20	17 23 17.36	2.7452	27 21 36.4	0.5
21	15 15 36.91	2.6231	23 18 31.2	9.536	21	17 26 2.01	2.7432	27 22 0.6	0.3
22	15 18 14.48	2.6292	23 27 58.4	9.371	22	17 28 46.54	2.7410	27 22 12.8	0.1
23	15 20 52.42	2.6352	23 37 15.7	9.204	23	17 31 30.93	2.7387	27 22 12.8	+ 0.1
24	15 23 30.71	2.6411	S. 23 46 22.9	9.035	24	17 34 15.18	2.7361	S. 27 22 0.7	0.3

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 5.				MONDAY 7.			
h	m	s	d	h	m	s	d
1	17 43 18.15	0	27 32 07.2	0	17 51 21.17	0.000	27 37 24.5
2	17 43 58.27	0	27 31 57.6	1	17 41 47.74	0.019	27 28 51.6
3	17 44 38.37	0	27 31 47.9	2	17 44 13.79	0.039	27 20 17.5
4	17 45 18.47	0	27 31 38.2	3	17 47 38.15	0.057	27 11 22.4
5	17 45 58.54	0	27 31 28.4	4	17 43 2.5	0.076	27 2 27.4
6	17 46 39.02	0	27 31 18.6	5	17 51 28.75	0.095	27 51 23.1
7	17 47 19.10	0	27 31 8.8	6	17 53 48.85	0.114	27 43 12.5
8	17 48 59.18	0	27 30 9.0	7	17 57 11.32	0.133	27 34 54.2
9	17 49 39.26	0	27 30 15.5	8	17 57 37.27	0.152	27 25 21.7
10	17 50 19.34	0	27 30 17.3	9	20 0 54.70	0.171	27 15 58.1
11	17 51 59.42	0	27 30 7.4	10	20 3 15.71	0.190	27 6 17.4
12	17 53 39.50	0	27 30 48.7	11	20 5 17.91	0.209	27 57 34.0
13	17 55 19.58	0	27 30 41.2	12	20 7 55.79	0.228	27 4 44.5
14	17 56 59.66	0	27 30 33.5	13	20 10 15.15	0.247	27 16 47.8
15	17 58 39.74	0	27 30 25.8	14	20 12 14.17	0.266	27 27 17.7
16	17 59 19.82	0	27 30 18.1	15	20 14 8.43	0.285	27 19 27.3
17	18 0 59.90	0	27 30 10.4	16	20 17 1.15	0.304	27 9 2.2
18	18 2 39.98	0	27 30 2.7	17	20 19 27.55	0.323	27 55 47.4
19	18 4 19.06	0	27 30 5.4	18	20 21 44.16	0.342	27 45 17.5
20	18 6 59.14	0	27 30 1.3	19	20 24 1.32	0.361	27 34 47.7
21	18 8 39.22	0	27 30 5.4	20	20 27 17.4	0.380	27 24 15.5
22	18 10 19.30	0	27 30 5.4	21	20 29 33.7	0.399	27 13 13.2
23	18 12 59.38	0	27 30 5.4	22	20 32 4.44	0.418	27 2 27.4
24	18 15 39.46	0	27 30 5.4	23	20 35 10.71	0.437	27 51 43.6
SUNDAY 6.				TUESDAY 8.			
h	m	s	d	h	m	s	d
1	18 18 19.54	0	27 30 11.3	0	20 38 14.47	0.456	27 40 2.5
2	18 20 59.62	0	27 30 14.2	1	20 40 27.75	0.475	27 29 1.1
3	18 23 39.70	0	27 30 17.1	2	20 42 41.02	0.494	27 17 57.7
4	18 26 19.78	0	27 30 20.0	3	20 44 54.29	0.513	27 6 4.1
5	18 28 59.86	0	27 30 22.9	4	20 47 7.56	0.532	27 55 17.5
6	18 31 39.94	0	27 30 25.8	5	20 49 20.83	0.551	27 44 47.1
7	18 34 19.02	0	27 30 28.7	6	20 51 34.10	0.570	27 33 15.5
8	18 36 59.10	0	27 30 31.6	7	20 53 47.37	0.589	27 22 2.2
9	18 39 39.18	0	27 30 34.5	8	20 56 0.64	0.608	27 10 54.5
10	18 42 19.26	0	27 30 37.4	9	20 58 13.91	0.627	27 0 27.5
11	18 44 59.34	0	27 30 40.3	10	21 0 27.18	0.646	26 49 17.5
12	18 47 39.42	0	27 30 43.2	11	21 2 40.45	0.665	26 38 21.1
13	18 50 19.50	0	27 30 46.1	12	21 4 53.72	0.684	26 27 27.7
14	18 52 59.58	0	27 30 49.0	13	21 7 7.00	0.703	26 16 34.3
15	18 55 39.66	0	27 30 51.9	14	21 9 20.27	0.722	26 5 40.9
16	18 58 19.74	0	27 30 54.8	15	21 11 33.54	0.741	25 54 47.5
17	19 0 59.82	0	27 30 57.7	16	21 13 46.81	0.760	25 44 54.1
18	19 3 39.90	0	27 30 60.6	17	21 16 0.08	0.779	25 34 60.7
19	19 6 19.98	0	27 30 63.5	18	21 18 13.35	0.798	25 24 67.3
20	19 8 59.06	0	27 30 66.4	19	21 20 26.62	0.817	25 14 73.9
21	19 11 39.14	0	27 30 69.3	20	21 22 39.89	0.836	25 4 80.5
22	19 14 19.22	0	27 30 72.2	21	21 24 53.16	0.855	24 54 87.1
23	19 16 59.30	0	27 30 75.1	22	21 27 6.43	0.874	24 44 93.7
24	19 19 39.38	0	27 30 78.0	23	21 29 19.70	0.893	24 34 100.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 9.					FRIDAY 11.				
0	21 26 24.12	2.0441	S. 14 52 31.0	12.744	0	22 58 17.42	1.8173	S. 4 3 7.7	13.55
1	21 28 26.56	2.0374	14 39 44.8	12.795	1	23 0 6.38	1.8146	3 49 11.9	13.5
2	21 30 28.61	2.0308	14 26 55.6	12.843	2	23 1 55.18	1.8120	3 35 16.0	13.5
3	21 32 30.26	2.0242	14 14 3.6	12.890	3	23 3 43.82	1.8095	3 21 20.0	13.5
4	21 34 31.52	2.0178	14 1 8.8	12.937	4	23 5 32.32	1.8072	3 7 23.9	13.5
5	21 36 32.40	2.0115	13 48 11.1	12.984	5	23 7 20.68	1.8049	2 53 27.9	13.5
6	21 38 32.90	2.0052	13 35 10.7	13.028	6	23 9 8.91	1.8027	2 39 32.0	13.5
7	21 40 33.02	1.9989	13 22 7.7	13.071	7	23 10 57.01	1.8006	2 25 36.2	13.5
8	21 42 32.77	1.9928	13 9 2.2	13.112	8	23 12 44.98	1.7985	2 11 40.5	13.5
9	21 44 32.16	1.9868	12 55 54.3	13.152	9	23 14 32.82	1.7964	1 57 45.0	13.5
10	21 46 31.19	1.9808	12 42 44.0	13.192	10	23 16 20.55	1.7946	1 43 49.7	13.5
11	21 48 29.86	1.9748	12 29 31.3	13.231	11	23 18 8.17	1.7929	1 29 54.7	13.5
12	21 50 28.17	1.9690	12 16 16.3	13.268	12	23 19 55.69	1.7912	1 16 0.0	13.5
13	21 52 26.14	1.9634	12 2 59.1	13.303	13	23 21 43.11	1.7895	1 2 5.7	13.5
14	21 54 23.78	1.9578	11 49 39.9	13.337	14	23 23 30.43	1.7878	0 48 11.8	13.5
15	21 56 21.08	1.9523	11 36 18.7	13.370	15	23 25 17.65	1.7863	0 34 18.3	13.5
16	21 58 18.05	1.9468	11 22 55.5	13.403	16	23 27 4.78	1.7849	0 20 25.3	13.5
17	22 0 14.70	1.9414	11 9 30.3	13.435	17	23 28 51.84	1.7836	S. 0 6 32.8	13.5
18	22 2 11.02	1.9361	10 56 3.3	13.465	18	23 30 38.82	1.7824	N. 0 7 19.1	13.5
19	22 4 7.03	1.9309	10 42 34.5	13.494	19	23 32 25.73	1.7812	0 21 10.4	13.5
20	22 6 2.73	1.9257	10 29 4.0	13.522	20	23 34 12.57	1.7802	0 35 1.0	13.5
21	22 7 58.12	1.9207	10 15 31.8	13.550	21	23 35 59.35	1.7792	0 48 51.0	13.5
22	22 9 53.21	1.9158	10 1 58.0	13.576	22	23 37 46.07	1.7782	1 2 40.3	13.5
23	22 11 48.01	1.9110	S. 9 48 22.7	13.600	23	23 39 32.74	1.7773	N. 1 16 28.8	13.5
THURSDAY 10.					SATURDAY 12.				
0	22 13 42.53	1.9062	S. 9 34 46.0	13.624	0	23 41 19.35	1.7765	N. 1 30 16.5	13.5
1	22 15 36.76	1.9015	9 21 7.8	13.647	1	23 43 5.92	1.7759	1 44 3.3	13.5
2	22 17 30.71	1.8968	9 7 28.3	13.669	2	23 44 52.46	1.7753	1 57 49.3	13.5
3	22 19 24.38	1.8923	8 53 47.5	13.690	3	23 46 38.96	1.7747	2 11 34.4	13.5
4	22 21 17.78	1.8879	8 40 5.5	13.711	4	23 48 25.43	1.7743	2 25 18.5	13.5
5	22 23 10.92	1.8836	8 26 22.2	13.731	5	23 50 11.88	1.7740	2 39 1.6	13.5
6	22 25 3.81	1.8793	8 12 37.8	13.749	6	23 51 58.31	1.7737	2 52 43.7	13.5
7	22 26 56.44	1.8751	7 58 52.4	13.766	7	23 53 44.72	1.7734	3 6 24.7	13.5
8	22 28 48.82	1.8710	7 45 5.9	13.782	8	23 55 31.12	1.7733	3 20 4.6	13.5
9	22 30 40.96	1.8670	7 31 18.5	13.797	9	23 57 17.52	1.7733	3 33 43.4	13.5
10	22 32 32.86	1.8631	7 17 30.2	13.812	10	23 59 3.91	1.7733	3 47 21.0	13.5
11	22 34 24.53	1.8593	7 3 41.0	13.826	11	0 0 50.31	1.7734	4 0 57.3	13.5
12	22 36 15.97	1.8555	6 49 51.1	13.839	12	0 2 36.72	1.7736	4 14 32.4	13.5
13	22 38 7.19	1.8518	6 36 0.4	13.851	13	0 4 23.14	1.7738	4 28 6.2	13.5
14	22 39 58.19	1.8482	6 22 9.0	13.862	14	0 6 9.58	1.7741	4 41 38.6	13.5
15	22 41 48.08	1.8448	6 8 17.0	13.872	15	0 7 56.03	1.7744	4 55 9.7	13.5
16	22 43 39.57	1.8415	5 54 24.4	13.882	16	0 9 42.51	1.7749	5 8 39.4	13.5
17	22 45 29.96	1.8381	5 40 31.2	13.891	17	0 11 29.02	1.7755	5 22 7.6	13.5
18	22 47 20.14	1.8349	5 26 37.5	13.900	18	0 13 15.57	1.7762	5 35 34.3	13.5
19	22 49 10.13	1.8317	5 12 43.4	13.909	19	0 15 2.16	1.7768	5 48 59.5	13.5
20	22 50 59.94	1.8287	4 58 48.9	13.918	20	0 16 48.79	1.7775	6 2 23.1	13.5
21	22 52 49.57	1.8257	4 44 54.0	13.917	21	0 18 35.46	1.7784	6 15 45.1	13.5
22	22 54 39.02	1.8228	4 30 58.8	13.922	22	0 20 22.19	1.7793	6 29 5.4	13.5
23	22 56 28.30	1.8200	4 17 3.4	13.926	23	0 22 8.98	1.7802	6 42 24.1	13.5
24	22 58 17.42	1.8173	S. 4 3 7.7	13.929	24	0 23 55.82	1.7811	N. 6 55 41.1	13.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

R.A.M.		L.M.T.		L.M.T.		R.A.M.		L.M.T.		
A.M.		M.		M.		A.M.		M.		
SUNDAY 13.										
0	0 23 55.92	1.00	N	6 55 41.1	10.00	0	1 51 57.12	1.00	N 16 46 22.7	1.00
1	0 25 42.73	1.00		7 5 52.3	10.13	1	1 53 57.55	1.00	17 57 24.8	1.00
2	0 27 27.72	1.00		7 22 9.7	10.26	2	1 55 47.55	1.00	17 5 24.1	1.00
3	0 29 17.72	1.00		7 35 21.3	10.39	3	1 57 42.13	1.00	17 19 17.4	1.00
4	0 31 3.21	1.00		7 45 31.0	10.52	4	1 59 37.74	1.00	17 30 7.7	1.00
5	0 32 51.13	1.00		8 1 35.8	11.05	5	2 1 3.43	1.00	17 43 54.0	1.00
6	0 34 15.44	1.00		8 14 44.7	11.18	6	2 3 27.42	1.00	17 51 3.1	1.00
7	0 35 25.74	1.00		8 27 45.7	11.31	7	2 5 25.77	1.00	18 2 14.1	1.00
8	0 35 13.33	1.00		8 41 5.4	11.44	8	2 7 22.25	1.00	18 12 47.0	1.00
9	0 40 0.72	1.00		8 53 5.1	11.57	9	2 9 17.7	1.00	18 23 17.7	1.00
10	0 41 47.72	1.00		9 7 47.7	12.10	10	2 11 17.17	1.00	18 33 42.9	1.00
11	0 43 37.43	1.00		9 17 47.2	12.23	11	2 13 13.52	1.00	18 44 3.8	1.00
12	0 45 24.34	1.00		9 32 37.5	12.36	12	2 15 11.17	1.00	18 56 2.3	1.00
13	0 47 12.17	1.00		9 45 27.5	12.49	13	2 17 7.7	1.00	19 4 32.3	1.00
14	0 49 0.53	1.00		10 55 17.3	12.62	14	2 19 7.27	1.00	19 14 3.2	1.00
15	0 50 48.51	1.00		10 11 7.5	12.75	15	2 21 5.74	1.00	19 24 42.7	1.00
16	0 52 17.21	1.00		10 23 47.2	12.88	16	2 23 4.5	1.00	19 34 43.2	1.00
17	0 54 25.75	1.00		10 37 27.7	12.99	17	2 25 3.55	1.00	19 44 1.7	1.00
18	0 57 14.43	1.00		10 47 5.1	13.12	18	2 27 2.7	1.00	19 54 5.5	1.00
19	0 58 3.25	1.00		11 1 44.7	13.25	19	2 29 2.5	1.00	20 4 7.0	1.00
20	0 59 52.21	1.00		11 14 34.2	13.38	20	2 31 2.42	1.00	20 17 47.3	1.00
21	1 1 41.12	1.00		11 27 43.0	13.51	21	2 33 2.77	1.00	20 27 21.7	1.00
22	1 3 3.55	1.00		11 37 3.2	13.64	22	2 35 1.11	1.00	20 37 5.2	1.00
23	1 5 26.80	1.00	N	11 51 47.7	13.77	23	2 37 3.23	1.00	N 20 47 15.7	1.00
MONDAY 14.										
0	1 7 9.55	1.00	N	12 4 1.5	13.90	0	2 39 5.12	1.00	N 20 51 14.9	1.00
1	1 8 52.31	1.00		12 17 1.7	14.03	1	2 41 7.41	1.00	21 0 4.1	1.00
2	1 10 40.24	1.00		12 27 47.2	14.16	2	2 43 5.17	1.00	21 10 5.2	1.00
3	1 12 2.2	1.00		12 41 5.5	14.29	3	2 45 10.17	1.00	21 20 2.0	1.00
4	1 14 21.55	1.00		12 53 15.2	14.42	4	2 47 12.4	1.00	21 27 1.5	1.00
5	1 15 7.2	1.00		13 5 25.0	14.55	5	2 49 15.7	1.00	21 37 47.7	1.00
6	1 17 1.74	1.00		13 17 34.8	15.08	6	2 51 17.21	1.00	21 45 41.5	1.00
7	1 18 1.45	1.00		13 27 2.7	15.21	7	2 53 21.12	1.00	21 54 2.8	1.00
8	1 21 52.45	1.00		13 41 1.6	15.34	8	2 55 24.74	1.00	22 3 1.6	1.00
9	1 23 4.74	1.00		13 57 7.3	15.47	9	2 57 2.47	1.00	22 11 31.7	1.00
10	1 25 5.7	1.00		14 5 31.2	15.60	10	2 59 12.5	1.00	22 19 57.2	1.00
11	1 27 7.7	1.00		14 17 2.3	15.73	11	3 1 17.7	1.00	22 27 1.1	1.00
12	1 29 17.42	1.00		14 27 11.7	15.86	12	3 3 41.7	1.00	22 37 1.1	1.00
13	1 31 1.42	1.00		14 40 57.7	15.99	13	3 5 47.24	1.00	22 46 1.2	1.00
14	1 33 2.77	1.00		14 52 17.1	16.12	14	3 7 52.21	1.00	22 52 47.7	1.00
15	1 35 55.7	1.00		15 4 27.2	16.25	15	3 9 57.55	1.00	23 0 7.7	1.00
16	1 37 47.71	1.00		15 15 51.5	16.38	16	3 11 3.7	1.00	23 7 27.4	1.00
17	1 39 4.55	1.00		15 27 2.7	16.51	17	3 13 1.7	1.00	23 17 12.7	1.00
18	1 41 1.77	1.00		15 38 51.1	16.64	18	3 15 17.7	1.00	23 27 51.1	1.00
19	1 43 2.54	1.00		15 49 1.1	16.77	19	3 17 2.77	1.00	23 37 4.5	1.00
20	1 45 7.54	1.00		15 59 5.5	16.90	20	3 19 7.7	1.00	23 47 5.5	1.00
21	1 47 7.5	1.00		16 9 5.5	17.03	21	3 21 7.7	1.00	23 57 5.5	1.00
22	1 49 2.7	1.00		16 19 5.5	17.16	22	3 23 7.7	1.00	24 0 5.5	1.00
23	1 51 5.2	1.00	N	16 29 5.5	17.29	23	3 25 7.7	1.00	N 24 0 5.5	1.00

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 1.					THURSDAY 3.				
0	13 24 27.67	2.3156	S. 13 52 38.5	14.915	0	15 23 30.71	2.6421	S. 23 46 22.9	9.035
1	13 26 46.80	2.3221	14 7 31.2	14.841	1	15 26 9.35	2.6469	23 55 19.9	8.864
2	13 29 6.32	2.3286	14 22 19.4	14.765	2	15 28 48.34	2.6526	24 4 6.6	8.692
3	13 31 26.23	2.3351	14 37 3.0	14.687	3	15 31 27.66	2.6581	24 12 42.9	8.518
4	13 33 46.53	2.3417	14 51 41.9	14.607	4	15 34 7.31	2.6636	24 21 8.7	8.343
5	13 36 7.23	2.3483	15 6 15.9	14.525	5	15 36 47.29	2.6689	24 29 24.0	8.166
6	13 38 28.33	2.3551	15 20 44.9	14.441	6	15 39 27.58	2.6741	24 37 28.6	7.987
7	13 40 49.84	2.3618	15 35 8.8	14.355	7	15 42 8.18	2.6792	24 45 22.4	7.807
8	13 43 11.75	2.3686	15 49 27.5	14.267	8	15 44 49.08	2.6842	24 53 5.4	7.625
9	13 45 34.07	2.3754	16 3 40.9	14.177	9	15 47 30.28	2.6890	25 0 37.4	7.442
10	13 47 56.80	2.3823	16 17 48.8	14.084	10	15 50 11.76	2.6936	25 7 58.4	7.257
11	13 50 19.94	2.3892	16 31 51.0	13.989	11	15 52 53.51	2.6980	25 15 8.3	7.072
12	13 52 43.50	2.3962	16 45 47.5	13.892	12	15 55 35.52	2.7023	25 22 7.0	6.885
13	13 55 7.48	2.4032	16 59 38.1	13.794	13	15 58 17.79	2.7066	25 28 54.5	6.697
14	13 57 31.88	2.4101	17 13 22.8	13.694	14	16 1 0.31	2.7107	25 35 30.6	6.507
15	13 59 56.69	2.4170	17 27 1.4	13.591	15	16 3 43.07	2.7146	25 41 55.3	6.317
16	14 2 21.92	2.4241	17 40 33.7	13.485	16	16 6 26.06	2.7183	25 48 8.6	6.125
17	14 4 47.58	2.4312	17 53 59.6	13.378	17	16 9 9.27	2.7218	25 54 10.3	5.932
18	14 7 13.67	2.4383	18 7 19.1	13.269	18	16 11 52.68	2.7252	26 0 0.4	5.738
19	14 9 40.18	2.4454	18 20 31.9	13.157	19	16 14 36.29	2.7284	26 5 38.8	5.543
20	14 12 7.12	2.4525	18 33 38.0	13.044	20	16 17 20.09	2.7315	26 11 5.5	5.348
21	14 14 34.48	2.4596	18 46 37.2	12.928	21	16 20 4.07	2.7345	26 16 20.5	5.152
22	14 17 2.27	2.4667	18 59 29.4	12.811	22	16 22 48.21	2.7369	26 21 23.7	4.954
23	14 19 30.49	2.4738	S. 19 12 14.5	12.691	23	16 25 32.50	2.7394	S. 26 26 15.0	4.755
WEDNESDAY 2.					FRIDAY 4.				
0	14 21 59.13	2.4809	S. 19 24 52.3	12.569	0	16 28 16.94	2.7416	S. 26 30 54.3	4.556
1	14 24 28.20	2.4881	19 37 22.8	12.445	1	16 31 1.51	2.7438	26 35 21.7	4.357
2	14 26 57.70	2.4952	19 49 45.7	12.318	2	16 33 46.20	2.7457	26 39 37.1	4.157
3	14 29 27.62	2.5023	20 2 1.0	12.190	3	16 36 31.00	2.7474	26 43 40.5	3.956
4	14 31 57.97	2.5093	20 14 8.5	12.060	4	16 39 15.89	2.7489	26 47 31.8	3.754
5	14 34 28.74	2.5164	20 26 8.2	11.928	5	16 42 0.87	2.7502	26 51 11.0	3.552
6	14 36 59.94	2.5235	20 37 59.9	11.793	6	16 44 45.92	2.7513	26 54 38.0	3.349
7	14 39 31.56	2.5305	20 49 43.4	11.657	7	16 47 31.03	2.7522	26 57 52.9	3.147
8	14 42 3.60	2.5374	21 1 18.7	11.518	8	16 50 16.19	2.7530	27 0 55.6	2.944
9	14 44 36.05	2.5443	21 12 45.6	11.377	9	16 53 1.39	2.7535	27 3 46.2	2.741
10	14 47 8.92	2.5512	21 24 4.0	11.234	10	16 55 46.61	2.7537	27 6 24.6	2.537
11	14 49 42.20	2.5580	21 35 13.7	11.089	11	16 58 31.84	2.7538	27 8 50.7	2.333
12	14 52 15.88	2.5648	21 46 14.7	10.942	12	17 1 17.07	2.7537	27 11 4.6	2.130
13	14 54 49.97	2.5716	21 57 6.8	10.794	13	17 4 2.29	2.7534	27 13 6.3	1.927
14	14 57 24.47	2.5783	22 7 50.0	10.644	14	17 6 47.48	2.7528	27 14 55.8	1.722
15	14 59 59.37	2.5849	22 18 24.1	10.492	15	17 9 32.63	2.7521	27 16 33.0	1.519
16	15 2 34.66	2.5914	22 28 49.0	10.337	16	17 12 17.73	2.7511	27 17 58.0	1.316
17	15 5 10.34	2.5980	22 39 4.5	10.180	17	17 15 2.76	2.7499	27 19 10.9	1.113
18	15 7 46.42	2.6045	22 49 10.6	10.022	18	17 17 47.72	2.7486	27 20 11.6	0.910
19	15 10 22.88	2.6107	22 59 7.2	9.862	19	17 20 32.59	2.7470	27 21 0.1	0.707
20	15 12 59.71	2.6169	23 8 54.1	9.700	20	17 23 17.36	2.7452	27 21 36.4	0.504
21	15 15 36.91	2.6231	23 18 31.2	9.536	21	17 26 2.01	2.7432	27 22 0.6	0.303
22	15 18 14.48	2.6292	23 27 58.4	9.371	22	17 28 46.54	2.7410	27 22 12.8	- 0.102
23	15 20 52.42	2.6352	23 37 15.7	9.204	23	17 31 30.93	2.7387	27 22 12.8	+ 0.101
24	15 23 30.71	2.6411	S. 23 46 22.9	9.035	24	17 34 15.18	2.7361	S. 27 22 0.7	0.302

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 5.					MONDAY 7.				
0	17 34 15.18	2.7361	S. 27 22 0.7	0.302	0	19 39 23.17	2.4305	S. 23 37 24.7	8.486
1	17 36 59.26	2.7332	27 21 36.6	0.501	1	19 41 48.74	2.4218	23 28 51.6	8.616
2	17 39 43.17	2.7302	27 21 0.6	0.699	2	19 44 13.79	2.4132	23 20 10.8	8.743
3	17 42 26.89	2.7270	27 20 12.7	0.898	3	19 46 38.33	2.4047	23 11 22.4	8.870
4	17 45 10.41	2.7236	27 19 12.9	1.096	4	19 49 2.35	2.3961	23 2 26.4	8.994
5	17 47 53.72	2.7200	27 18 1.2	1.293	5	19 51 25.86	2.3875	22 53 23.1	9.116
6	17 50 36.81	2.7162	27 16 37.8	1.488	6	19 53 48.85	2.3788	22 44 12.5	9.237
7	17 53 19.67	2.7122	27 15 2.7	1.683	7	19 56 11.32	2.3702	22 34 54.7	9.355
8	17 56 2.28	2.7081	27 13 15.8	1.878	8	19 58 33.27	2.3615	22 25 29.9	9.472
9	17 58 44.64	2.7037	27 11 17.3	2.072	9	20 0 54.70	2.3528	22 15 58.1	9.587
10	18 1 26.73	2.6992	27 9 7.2	2.264	10	20 3 15.61	2.3442	22 6 19.4	9.701
11	18 4 8.54	2.6945	27 6 45.6	2.455	11	20 5 36.01	2.3357	21 56 34.0	9.812
12	18 6 50.07	2.6897	27 4 12.6	2.645	12	20 7 55.89	2.3270	21 46 42.0	9.921
13	18 9 31.30	2.6846	27 1 28.2	2.834	13	20 10 15.25	2.3184	21 36 43.5	10.028
14	18 12 12.22	2.6794	26 58 32.5	3.022	14	20 12 34.10	2.3098	21 26 38.6	10.135
15	18 14 52.83	2.6741	26 55 25.6	3.208	15	20 14 52.43	2.3012	21 16 27.3	10.239
16	18 17 33.11	2.6685	26 52 7.5	3.393	16	20 17 10.25	2.2927	21 6 9.9	10.341
17	18 20 13.05	2.6627	26 48 38.4	3.577	17	20 19 27.55	2.2841	20 55 46.4	10.442
18	18 22 52.64	2.6569	26 44 58.3	3.759	18	20 21 44.34	2.2756	20 45 16.9	10.540
19	18 25 31.88	2.6510	26 41 7.3	3.941	19	20 24 0.62	2.2672	20 34 41.6	10.637
20	18 28 10.76	2.6448	26 37 5.4	4.121	20	20 26 16.40	2.2587	20 24 0.5	10.732
21	18 30 49.26	2.6385	26 32 52.8	4.299	21	20 28 31.67	2.2503	20 13 13.7	10.826
22	18 33 27.38	2.6321	26 28 29.5	4.477	22	20 30 46.44	2.2420	20 2 21.4	10.917
23	18 36 5.11	2.6256	S. 26 23 55.6	4.652	23	20 33 0.71	2.2337	S. 19 51 23.6	11.007
SUNDAY 6.					TUESDAY 8.				
0	18 38 42.45	2.6189	S. 26 19 11.3	4.825	0	20 35 14.49	2.2255	S. 19 40 20.5	11.096
1	18 41 19.38	2.6121	26 14 16.6	4.997	1	20 37 27.77	2.2172	19 29 12.1	11.182
2	18 43 55.90	2.6052	26 9 11.6	5.168	2	20 39 40.56	2.2090	19 17 58.6	11.267
3	18 46 32.00	2.5981	26 3 56.4	5.337	3	20 41 52.85	2.2008	19 6 40.0	11.351
4	18 49 7.67	2.5909	25 58 31.1	5.505	4	20 44 4.65	2.1928	18 55 16.5	11.432
5	18 51 42.91	2.5837	25 52 55.8	5.670	5	20 46 15.98	2.1848	18 43 48.1	11.512
6	18 54 17.71	2.5763	25 47 10.7	5.833	6	20 48 26.83	2.1768	18 32 15.0	11.591
7	18 56 52.07	2.5688	25 41 15.8	5.996	7	20 50 37.20	2.1689	18 20 37.2	11.668
8	18 59 25.97	2.5612	25 35 11.1	6.158	8	20 52 47.10	2.1610	18 8 54.8	11.743
9	19 1 59.41	2.5535	25 28 56.8	6.317	9	20 54 56.52	2.1531	17 57 8.0	11.817
10	19 4 32.39	2.5458	25 22 33.1	6.473	10	20 57 5.47	2.1454	17 45 16.8	11.889
11	19 7 4.90	2.5380	25 16 0.0	6.629	11	20 59 13.97	2.1378	17 33 21.3	11.960
12	19 9 36.95	2.5302	25 9 17.6	6.783	12	21 1 22.01	2.1302	17 21 21.6	12.029
13	19 12 8.52	2.5221	25 2 26.0	6.935	13	21 3 29.59	2.1226	17 9 17.8	12.097
14	19 14 39.60	2.5140	24 55 25.4	7.085	14	21 5 36.72	2.1151	16 57 10.0	12.163
15	19 17 10.20	2.5059	24 48 15.8	7.233	15	21 7 43.40	2.1077	16 44 58.3	12.227
16	19 19 40.31	2.4977	24 40 57.4	7.380	16	21 9 49.64	2.1003	16 32 42.8	12.290
17	19 22 9.92	2.4894	24 33 30.2	7.525	17	21 11 55.44	2.0931	16 20 23.5	12.352
18	19 24 39.04	2.4811	24 25 54.4	7.667	18	21 14 0.81	2.0859	16 8 0.6	12.412
19	19 27 7.66	2.4728	24 18 10.1	7.808	19	21 16 5.75	2.0787	15 55 34.1	12.471
20	19 29 35.78	2.4644	24 10 17.4	7.947	20	21 18 10.26	2.0716	15 43 4.1	12.528
21	19 32 3.39	2.4559	24 2 16.4	8.085	21	21 20 14.34	2.0646	15 30 30.7	12.584
22	19 34 30.49	2.4474	23 54 7.2	8.221	22	21 22 18.01	2.0577	15 17 54.0	12.638
23	19 36 57.08	2.4390	23 45 49.9	8.354	23	21 24 21.27	2.0509	15 5 14.1	12.692
24	19 39 23.17	2.4305	S. 23 37 24.7	8.486	24	21 26 24.12	2.0441	S. 14 52 31.0	12.744

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 9.					FRIDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	21 26 24.12	2.0441	S. 14 52 31.0	12.744	0	22 58 17.42	1.8173	S. 4 3 7.7	13.929
1	21 28 26.56	2.0374	14 39 44.8	12.795	1	23 0 6.38	1.8146	3 49 11.9	13.931
2	21 30 28.61	2.0308	14 26 55.6	12.843	2	23 1 55.18	1.8120	3 35 16.0	13.933
3	21 32 30.26	2.0242	14 14 3.6	12.890	3	23 3 43.82	1.8095	3 21 20.0	13.934
4	21 34 31.52	2.0178	14 1 8.8	12.937	4	23 5 32.32	1.8072	3 7 23.9	13.934
5	21 36 32.40	2.0115	13 48 11.1	12.984	5	23 7 20.68	1.8049	2 53 27.9	13.933
6	21 38 32.90	2.0052	13 35 10.7	13.028	6	23 9 8.91	1.8027	2 39 32.0	13.931
7	21 40 33.02	1.9989	13 22 7.7	13.071	7	23 10 57.01	1.8006	2 25 36.2	13.929
8	21 42 32.77	1.9928	13 9 2.2	13.112	8	23 12 44.98	1.7985	2 11 40.5	13.927
9	21 44 32.16	1.9868	12 55 54.3	13.152	9	23 14 32.82	1.7964	1 57 45.0	13.923
10	21 46 31.19	1.9808	12 42 44.0	13.192	10	23 16 20.55	1.7946	1 43 49.7	13.919
11	21 48 29.86	1.9748	12 29 31.3	13.231	11	23 18 8.17	1.7929	1 29 54.7	13.914
12	21 50 28.17	1.9690	12 16 16.3	13.268	12	23 19 55.69	1.7912	1 16 0.0	13.908
13	21 52 26.14	1.9634	12 2 59.1	13.303	13	23 21 43.11	1.7895	1 2 5.7	13.902
14	21 54 23.78	1.9578	11 49 39.9	13.337	14	23 23 30.43	1.7878	0 48 11.8	13.895
15	21 56 21.08	1.9523	11 36 18.7	13.370	15	23 25 17.65	1.7853	0 34 18.3	13.887
16	21 58 18.05	1.9468	11 22 55.5	13.403	16	23 27 4.78	1.7849	0 20 25.3	13.879
17	22 0 14.70	1.9414	11 9 30.3	13.435	17	23 28 51.84	1.7836	S. 0 6 32.8	13.870
18	22 2 11.02	1.9361	10 56 3.3	13.465	18	23 30 38.82	1.7824	N. 0 7 19.1	13.860
19	22 4 7.03	1.9309	10 42 34.5	13.494	19	23 32 25.73	1.7812	0 21 10.4	13.849
20	22 6 2.73	1.9257	10 29 4.0	13.522	20	23 34 12.57	1.7802	0 35 1.0	13.838
21	22 7 58.12	1.9207	10 15 31.8	13.550	21	23 35 59.35	1.7792	0 48 51.0	13.827
22	22 9 53.21	1.9158	10 1 58.0	13.576	22	23 37 46.07	1.7782	1 2 40.3	13.815
23	22 11 48.01	1.9110	S. 9 48 22.7	13.600	23	23 39 32.74	1.7773	N. 1 16 28.8	13.802
THURSDAY 10.					SATURDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 13 42.53	1.9062	S. 9 34 46.0	13.624	0	23 41 19.35	1.7765	N. 1 30 16.5	13.788
1	22 15 36.76	1.9015	9 21 7.8	13.647	1	23 43 5.92	1.7759	1 44 3.3	13.774
2	22 17 30.71	1.8968	9 7 28.3	13.669	2	23 44 52.46	1.7753	1 57 49.3	13.759
3	22 19 24.38	1.8923	8 53 47.5	13.690	3	23 46 38.96	1.7747	2 11 34.4	13.743
4	22 21 17.78	1.8879	8 40 5.5	13.711	4	23 48 25.43	1.7743	2 25 18.5	13.727
5	22 23 10.92	1.8836	8 26 22.2	13.731	5	23 50 11.88	1.7740	2 39 1.6	13.710
6	22 25 3.81	1.8793	8 12 37.8	13.749	6	23 51 58.31	1.7737	2 52 43.7	13.692
7	22 26 56.44	1.8751	7 58 52.4	13.766	7	23 53 44.72	1.7734	3 6 24.7	13.674
8	22 28 48.82	1.8710	7 45 5.9	13.782	8	23 55 31.12	1.7733	3 20 4.6	13.656
9	22 30 40.96	1.8670	7 31 18.5	13.797	9	23 57 17.52	1.7733	3 33 43.4	13.637
10	22 32 32.86	1.8631	7 17 30.2	13.812	10	23 59 3.91	1.7733	3 47 21.0	13.616
11	22 34 24.53	1.8593	7 3 41.0	13.826	11	0 0 50.31	1.7734	4 0 57.3	13.595
12	22 36 15.97	1.8555	6 49 51.1	13.839	12	0 2 36.72	1.7736	4 14 32.4	13.574
13	22 38 7.19	1.8518	6 36 0.4	13.851	13	0 4 23.14	1.7738	4 28 6.2	13.552
14	22 39 58.19	1.8482	6 22 9.0	13.862	14	0 6 9.58	1.7741	4 41 38.6	13.529
15	22 41 48.98	1.8448	6 8 17.0	13.872	15	0 7 56.03	1.7744	4 55 9.7	13.507
16	22 43 39.57	1.8415	5 54 24.4	13.882	16	0 9 42.51	1.7749	5 8 39.4	13.483
17	22 45 29.96	1.8381	5 40 31.2	13.891	17	0 11 29.02	1.7755	5 22 7.6	13.458
18	22 47 20.14	1.8349	5 26 37.5	13.898	18	0 13 15.57	1.7752	5 35 34.3	13.433
19	22 49 10.13	1.8317	5 12 43.4	13.905	19	0 15 2.16	1.7768	5 48 59.5	13.407
20	22 50 59.94	1.8287	4 58 48.9	13.912	20	0 16 48.79	1.7775	6 2 23.1	13.380
21	22 52 49.57	1.8257	4 44 54.0	13.917	21	0 18 35.46	1.7784	6 15 45.1	13.352
22	22 54 39.02	1.8228	4 30 58.8	13.922	22	0 20 22.19	1.7793	6 29 5.4	13.321
23	22 56 28.30	1.8200	4 17 3.4	13.926	23	0 22 8.98	1.7802	6 42 24.1	13.297
24	22 58 17.42	1.8173	S. 4 3 7.7	13.929	24	0 23 55.82	1.7813	N. 6 55 41.1	13.268

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 13.					TUESDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 55.82	1.7813	N. 6 55 41.1	13.268	0	1 51 57.12	1.9106	N. 16 46 22.7	11.067
1	0 25 42.73	1.7825	7 8 56.3	13.238	1	1 53 51.88	1.9147	16 57 24.8	11.003
2	0 27 29.72	1.7837	7 22 9.7	13.208	2	1 55 46.88	1.9188	17 8 23.1	10.938
3	0 29 16.78	1.7849	7 35 21.3	13.177	3	1 57 42.13	1.9230	17 19 17.4	10.872
4	0 31 3.91	1.7863	7 48 31.0	13.146	4	1 59 37.64	1.9272	17 30 7.7	10.805
5	0 32 51.13	1.7876	8 1 38.8	13.114	5	2 1 33.40	1.9315	17 40 54.0	10.737
6	0 34 38.44	1.7893	8 14 44.7	13.082	6	2 3 29.42	1.9358	17 51 36.1	10.668
7	0 36 25.84	1.7908	8 27 48.6	13.048	7	2 5 25.70	1.9402	18 2 14.1	10.599
8	0 38 13.33	1.7924	8 40 50.4	13.013	8	2 7 22.25	1.9447	18 12 48.0	10.529
9	0 40 0.92	1.7941	8 53 50.1	12.978	9	2 9 19.07	1.9492	18 23 17.6	10.457
10	0 41 48.62	1.7959	9 6 47.7	12.943	10	2 11 16.16	1.9537	18 33 42.9	10.385
11	0 43 36.43	1.7977	9 19 43.2	12.907	11	2 13 13.52	1.9583	18 44 3.8	10.312
12	0 45 24.34	1.7995	9 32 36.5	12.869	12	2 15 11.16	1.9630	18 54 20.3	10.238
13	0 47 12.37	1.8016	9 45 27.5	12.832	13	2 17 9.08	1.9676	19 4 32.3	10.163
14	0 49 0.53	1.8037	9 58 16.3	12.794	14	2 19 7.27	1.9722	19 14 39.9	10.088
15	0 50 48.81	1.8057	10 11 2.8	12.755	15	2 21 5.74	1.9769	19 24 42.9	10.011
16	0 52 37.21	1.8079	10 23 46.9	12.715	16	2 23 4.50	1.9817	19 34 41.2	9.933
17	0 54 25.75	1.8102	10 36 28.6	12.676	17	2 25 3.55	1.9865	19 44 34.9	9.855
18	0 56 14.43	1.8125	10 49 8.0	12.636	18	2 27 2.88	1.9913	19 54 23.8	9.776
19	0 58 3.25	1.8148	11 1 44.9	12.594	19	2 29 2.50	1.9962	20 4 8.0	9.696
20	0 59 52.21	1.8172	11 14 19.2	12.551	20	2 31 2.42	2.0011	20 13 47.3	9.614
21	1 1 41.32	1.8197	11 26 51.0	12.508	21	2 33 2.63	2.0059	20 23 21.7	9.532
22	1 3 30.58	1.8223	11 39 20.2	12.464	22	2 35 3.13	2.0108	20 32 51.2	9.449
23	1 5 20.00	1.8250	N. 11 51 46.7	12.419	23	2 37 3.93	2.0157	N. 20 42 15.6	9.364
MONDAY 14.					WEDNESDAY 16.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	1 7 9.58	1.8277	N. 12 4 10.5	12.374	0	2 39 5.02	2.0207	N. 20 51 34.9	9.279
1	1 8 59.33	1.8305	12 16 31.6	12.328	1	2 41 6.41	2.0257	21 0 49.1	9.194
2	1 10 49.24	1.8333	12 28 49.9	12.282	2	2 43 8.10	2.0307	21 9 58.2	9.107
3	1 12 39.32	1.8362	12 41 5.5	12.236	3	2 45 10.10	2.0358	21 19 2.0	9.019
4	1 14 29.58	1.8392	12 53 18.2	12.187	4	2 47 12.40	2.0408	21 28 0.5	8.931
5	1 16 20.02	1.8422	13 5 28.0	12.138	5	2 49 15.00	2.0459	21 36 53.7	8.842
6	1 18 10.64	1.8453	13 17 34.8	12.089	6	2 51 17.91	2.0510	21 45 41.5	8.751
7	1 20 1.45	1.8484	13 29 38.7	12.040	7	2 53 21.12	2.0561	21 54 23.8	8.659
8	1 21 52.45	1.8516	13 41 39.6	11.988	8	2 55 24.64	2.0612	22 3 0.6	8.566
9	1 23 43.64	1.8548	13 53 37.3	11.936	9	2 57 28.46	2.0663	22 11 31.7	8.472
10	1 25 35.03	1.8582	14 5 31.9	11.884	10	2 59 32.59	2.0714	22 19 57.2	8.377
11	1 27 26.62	1.8616	14 17 23.3	11.831	11	3 1 37.03	2.0766	22 28 17.0	8.282
12	1 29 18.42	1.8650	14 29 11.6	11.777	12	3 3 41.78	2.0817	22 36 31.0	8.185
13	1 31 10.42	1.8684	14 40 56.6	11.722	13	3 5 46.84	2.0869	22 44 39.2	8.088
14	1 33 2.63	1.8720	14 52 38.3	11.667	14	3 7 52.21	2.0920	22 52 41.6	7.990
15	1 34 55.06	1.8757	15 4 16.6	11.610	15	3 9 57.88	2.0971	23 0 38.0	7.890
16	1 36 47.71	1.8793	15 15 51.5	11.553	16	3 12 3.86	2.1023	23 8 28.4	7.789
17	1 38 40.58	1.8830	15 27 23.0	11.496	17	3 14 10.15	2.1075	23 16 12.7	7.688
18	1 40 33.67	1.8868	15 38 51.0	11.437	18	3 16 16.76	2.1127	23 23 51.0	7.587
19	1 42 26.99	1.8906	15 50 15.4	11.377	19	3 18 23.67	2.1178	23 31 23.1	7.483
20	1 44 20.54	1.8945	16 1 36.3	11.317	20	3 20 30.89	2.1229	23 38 48.9	7.378
21	1 46 14.33	1.8984	16 12 53.5	11.256	21	3 22 38.42	2.1281	23 46 8.5	7.273
22	1 48 8.35	1.9023	16 24 7.0	11.194	22	3 24 46.26	2.1332	23 53 21.7	7.167
23	1 50 2.61	1.9064	16 35 16.8	11.131	23	3 26 54.40	2.1382	24 0 28.5	7.060
24	1 51 57.12	1.9106	N. 16 46 22.7	11.067	24	3 29 2.85	2.1433	N. 24 7 28.9	6.952

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 17.					SATURDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	3 29 2.85	2.1433	N.24 7 28.9	6.952	0	5 17 2.60	2.3327	N.27 19 38.2	0.758
1	3 31 11.60	2.1484	24 14 22.8	6.843	1	5 19 22.63	2.3348	27 20 19.3	0.612
2	3 33 20.66	2.1535	24 21 10.1	6.733	2	5 21 42.78	2.3368	27 20 51.6	0.465
3	3 35 30.02	2.1585	24 27 50.7	6.622	3	5 24 3.05	2.3387	27 21 15.1	0.319
4	3 37 39.68	2.1635	24 34 24.7	6.510	4	5 26 23.43	2.3405	27 21 29.9	0.173
5	3 39 49.64	2.1685	24 40 51.9	6.397	5	5 28 43.91	2.3423	27 21 35.9	+ 0.027
6	3 41 59.90	2.1734	24 47 12.3	6.283	6	5 31 4.50	2.3439	27 21 33.1	- 0.121
7	3 44 10.45	2.1783	24 53 25.9	6.168	7	5 33 25.18	2.3453	27 21 21.4	0.268
8	3 46 21.30	2.1832	24 59 32.5	6.052	8	5 35 45.94	2.3467	27 21 0.9	0.415
9	3 48 32.44	2.1881	25 5 32.1	5.935	9	5 38 6.78	2.3480	27 20 31.6	0.563
10	3 50 43.87	2.1929	25 11 24.7	5.818	10	5 40 27.70	2.3492	27 19 53.4	0.711
11	3 52 55.59	2.1977	25 17 10.3	5.700	11	5 42 48.69	2.3503	27 19 6.3	0.859
12	3 55 7.60	2.2025	25 22 48.7	5.580	12	5 45 9.74	2.3513	27 18 10.3	1.008
13	3 57 19.89	2.2072	25 28 19.9	5.460	13	5 47 30.85	2.3521	27 17 5.4	1.157
14	3 59 32.46	2.2119	25 33 43.9	5.338	14	5 49 52.00	2.3529	27 15 51.5	1.306
15	4 1 45.32	2.2166	25 39 0.5	5.216	15	5 52 13.20	2.3537	27 14 28.7	1.454
16	4 3 58.45	2.2211	25 44 9.8	5.093	16	5 54 34.44	2.3542	27 12 57.0	1.603
17	4 6 11.85	2.2256	25 49 11.7	4.970	17	5 56 55.70	2.3546	27 11 16.3	1.752
18	4 8 25.52	2.2301	25 54 6.2	4.846	18	5 59 16.99	2.3550	27 9 26.7	1.902
19	4 10 39.46	2.2345	25 58 53.2	4.720	19	6 1 38.30	2.3552	27 7 28.1	2.051
20	4 12 53.66	2.2389	26 3 32.6	4.593	20	6 3 59.62	2.3554	27 5 20.6	2.199
21	4 15 8.13	2.2433	26 8 4.3	4.465	21	6 6 20.95	2.3555	27 3 4.2	2.348
22	4 17 22.86	2.2476	26 12 28.4	4.337	22	6 8 42.28	2.3555	27 0 38.8	2.497
23	4 19 37.84	2.2518	N.26 16 44.8	4.208	23	6 11 3.61	2.3553	N.26 58 4.5	2.647
FRIDAY 18.					SUNDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	4 21 53.07	2.2559	N.26 20 53.4	4.078	0	6 13 24.92	2.3550	N.26 55 21.2	2.796
1	4 24 8.55	2.2600	26 24 54.2	3.948	1	6 15 46.21	2.3547	26 52 29.0	2.944
2	4 26 24.27	2.2640	26 28 47.1	3.817	2	6 18 7.48	2.3542	26 49 27.9	3.093
3	4 28 40.23	2.2680	26 32 32.2	3.685	3	6 20 28.72	2.3537	26 46 17.8	3.242
4	4 30 56.43	2.2718	26 36 9.3	3.552	4	6 22 49.92	2.3530	26 42 58.9	3.390
5	4 33 12.85	2.2756	26 39 38.4	3.418	5	6 25 11.08	2.3522	26 39 31.0	3.539
6	4 35 29.50	2.2793	26 42 59.5	3.284	6	6 27 32.19	2.3514	26 35 54.2	3.687
7	4 37 46.37	2.2830	26 46 12.5	3.148	7	6 29 53.25	2.3505	26 32 8.6	3.834
8	4 40 3.46	2.2867	26 49 17.3	3.013	8	6 32 14.25	2.3494	26 28 14.1	3.982
9	4 42 20.77	2.2902	26 52 14.0	2.877	9	6 34 35.18	2.3482	26 24 10.8	4.128
10	4 44 38.29	2.2936	26 55 2.5	2.739	10	6 36 56.04	2.3470	26 19 58.7	4.275
11	4 46 56.01	2.2969	26 57 42.7	2.601	11	6 39 16.82	2.3458	26 15 37.8	4.422
12	4 49 13.92	2.3002	27 0 14.6	2.462	12	6 41 37.53	2.3444	26 11 8.1	4.568
13	4 51 32.03	2.3034	27 2 38.2	2.323	13	6 43 58.15	2.3428	26 6 29.7	4.713
14	4 53 50.33	2.3066	27 4 53.4	2.184	14	6 46 18.67	2.3412	26 1 42.5	4.859
15	4 56 8.82	2.3097	27 7 0.3	2.044	15	6 48 39.09	2.3395	25 56 46.6	5.004
16	4 58 27.49	2.3126	27 8 58.7	1.903	16	6 50 59.41	2.3378	25 51 42.0	5.148
17	5 0 46.33	2.3154	27 10 48.6	1.761	17	6 53 19.63	2.3360	25 46 28.8	5.293
18	5 3 5.33	2.3181	27 12 30.0	1.619	18	6 55 39.73	2.3340	25 41 6.9	5.437
19	5 5 24.50	2.3208	27 14 2.9	1.477	19	6 57 59.71	2.3320	25 35 36.4	5.579
20	5 7 43.83	2.3234	27 15 27.2	1.333	20	7 0 19.57	2.3300	25 29 57.4	5.721
21	5 10 3.31	2.3259	27 16 42.9	1.190	21	7 2 39.31	2.3278	25 24 9.9	5.863
22	5 12 22.94	2.3282	27 17 50.0	1.046	22	7 4 58.91	2.3255	25 18 13.9	6.004
23	5 14 42.2	2.3304	27 18 48.4	0.902	23	7 7 18.37	2.3232	25 12 9.4	6.146
24	5 17 2	2.3325	27 19 28.2	0.758	24	7 9 37.70	2.3209	N.25 5 56.4	6.287

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 21.					WEDNESDAY 23.				
0	7 9 37.70	2.3209	N.25 5 56.4	6.287	0	8 57 23.61	2.1607	N.17 37 28.0	12.041
1	7 11 56.88	2.3184	24 59 35.0	6.426	1	8 59 33.15	2.1573	17 25 22.7	12.137
2	7 14 15.91	2.3159	24 53 5.3	6.564	2	9 1 42.49	2.1539	17 13 11.6	12.232
3	7 16 34.79	2.3133	24 46 27.3	6.703	3	9 3 51.62	2.1504	17 0 54.9	12.325
4	7 18 53.51	2.3107	24 39 41.0	6.841	4	9 6 0.54	2.1470	16 48 32.6	12.417
5	7 21 12.07	2.3080	24 32 46.4	6.978	5	9 8 9.26	2.1437	16 36 4.9	12.507
6	7 23 30.47	2.3052	24 25 43.6	7.114	6	9 10 17.78	2.1403	16 23 31.8	12.597
7	7 25 48.70	2.3024	24 18 32.7	7.250	7	9 12 26.10	2.1370	16 10 53.3	12.685
8	7 28 6.76	2.2995	24 11 13.6	7.386	8	9 14 34.22	2.1337	15 58 9.6	12.772
9	7 30 24.64	2.2965	24 3 46.4	7.520	9	9 16 42.14	2.1304	15 45 20.7	12.858
10	7 32 42.34	2.2935	23 56 11.2	7.653	10	9 18 49.87	2.1273	15 32 26.7	12.943
11	7 34 59.86	2.2905	23 48 28.1	7.785	11	9 20 57.41	2.1242	15 19 27.5	13.028
12	7 37 17.20	2.2874	23 40 37.0	7.917	12	9 23 4.77	2.1211	15 6 23.3	13.111
13	7 39 34.35	2.2843	23 32 38.0	8.048	13	9 25 11.94	2.1180	14 53 14.2	13.198
14	7 41 51.31	2.2811	23 24 31.2	8.178	14	9 27 18.93	2.1149	14 40 0.3	13.278
15	7 44 8.08	2.2778	23 16 16.6	8.308	15	9 29 25.73	2.1118	14 26 41.6	13.351
16	7 46 24.65	2.2746	23 7 54.3	8.437	16	9 31 32.35	2.1089	14 13 18.2	13.429
17	7 48 41.03	2.2713	22 59 24.2	8.565	17	9 33 38.80	2.1061	13 59 50.1	13.507
18	7 50 57.21	2.2679	22 50 46.5	8.692	18	9 35 45.08	2.1032	13 46 17.4	13.583
19	7 53 13.18	2.2645	22 42 1.2	8.817	19	9 37 51.19	2.1004	13 32 40.2	13.658
20	7 55 28.95	2.2612	22 33 8.4	8.942	20	9 39 57.13	2.0977	13 18 58.5	13.731
21	7 57 44.52	2.2578	22 24 8.1	9.067	21	9 42 2.91	2.0950	13 5 12.5	13.803
22	7 59 59.88	2.2543	22 15 0.4	9.190	22	9 44 8.53	2.0923	12 51 22.2	13.874
23	8 2 15.03	2.2508	N.22 5 45.3	9.312	23	9 46 13.99	2.0897	N.12 37 27.6	13.944
TUESDAY 22.					THURSDAY 24.				
0	8 4 29.97	2.2473	N.21 56 23.0	9.433	0	9 48 19.30	2.0872	N.12 23 28.9	14.013
1	8 6 44.70	2.2437	21 46 53.4	9.553	1	9 50 24.46	2.0847	12 9 26.1	14.081
2	8 8 59.21	2.2401	21 37 16.6	9.673	2	9 52 29.47	2.0823	11 55 19.2	14.147
3	8 11 13.51	2.2366	21 27 32.6	9.792	3	9 54 34.34	2.0800	11 41 8.4	14.212
4	8 13 27.60	2.2330	21 17 41.5	9.910	4	9 56 39.07	2.0777	11 26 53.7	14.277
5	8 15 41.47	2.2293	21 7 43.4	10.026	5	9 58 43.66	2.0754	11 12 35.2	14.339
6	8 17 55.12	2.2257	20 57 38.4	10.141	6	10 0 48.11	2.0731	10 58 13.0	14.401
7	8 20 8.55	2.2221	20 47 26.5	10.256	7	10 2 52.43	2.0710	10 43 47.1	14.462
8	8 22 21.77	2.2185	20 37 7.7	10.370	8	10 4 56.63	2.0691	10 29 17.6	14.522
9	8 24 34.77	2.2148	20 26 42.1	10.482	9	10 7 0.72	2.0672	10 14 44.5	14.580
10	8 26 47.55	2.2112	20 16 9.8	10.593	10	10 9 4.69	2.0652	10 0 8.0	14.637
11	8 29 0.11	2.2075	20 5 30.9	10.703	11	10 11 8.54	2.0633	9 45 28.1	14.693
12	8 31 12.45	2.2038	19 54 45.4	10.813	12	10 13 12.28	2.0614	9 30 44.8	14.748
13	8 33 24.57	2.2002	19 43 53.3	10.921	13	10 15 15.91	2.0597	9 15 58.3	14.802
14	8 35 36.47	2.1966	19 32 54.8	11.028	14	10 17 19.45	2.0581	9 1 8.6	14.853
15	8 37 48.16	2.1930	19 21 49.9	11.135	15	10 19 22.89	2.0565	8 46 15.9	14.904
16	8 39 59.63	2.1893	19 10 38.6	11.241	16	10 21 26.23	2.0550	8 31 20.1	14.955
17	8 42 10.88	2.1857	18 59 21.0	11.344	17	10 23 29.49	2.0536	8 16 21.3	15.004
18	8 44 21.91	2.1821	18 47 57.3	11.447	18	10 25 32.66	2.0522	8 1 19.6	15.052
19	8 46 32.73	2.1785	18 36 27.4	11.549	19	10 27 35.75	2.0509	7 46 15.1	15.098
20	8 48 43.33	2.1749	18 24 51.4	11.650	20	10 29 38.77	2.0497	7 31 7.8	15.143
21	8 50 53.72	2.1714	18 13 9.4	11.750	21	10 31 41.71	2.0485	7 15 57.9	15.187
22	8 53 3.90	2.1678	18 1 21.4	11.848	22	10 33 44.59	2.0475	7 0 45.4	15.230
23	8 55 13.86	2.1642	17 49 27.6	11.945	23	10 35 47.41	2.0464	6 45 30.3	15.272
24	8 57 23.61	2.1607	N.17 37 28.0	12.041	24	10 37 50.16	2.0454	N. 6 30 12.8	15.312

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 25.					SUNDAY 27.				
0	10 37 50.16	2.0454	N. 6 30 12.8	15.312	0	12 16 30.92	2.0993	S. 6 7 59.2	15.786
1	10 39 52.86	2.0446	6 14 52.9	15.352	1	12 18 36.97	2.1026	6 23 45.7	15.764
2	10 41 55.52	2.0439	5 59 30.6	15.390	2	12 20 43.23	2.1060	6 39 30.9	15.740
3	10 43 58.13	2.0432	5 44 6.1	15.426	3	12 22 49.69	2.1094	6 55 14.5	15.714
4	10 46 0.70	2.0426	5 28 39.5	15.462	4	12 24 56.36	2.1130	7 10 56.5	15.687
5	10 48 3.24	2.0420	5 13 10.7	15.497	5	12 27 3.25	2.1166	7 26 36.9	15.658
6	10 50 5.74	2.0415	4 57 39.9	15.530	6	12 29 10.35	2.1202	7 42 15.5	15.628
7	10 52 8.22	2.0412	4 42 7.1	15.562	7	12 31 17.67	2.1240	7 57 52.3	15.597
8	10 54 10.68	2.0409	4 26 32.4	15.592	8	12 33 25.23	2.1280	8 13 27.2	15.564
9	10 56 13.13	2.0407	4 10 56.0	15.622	9	12 35 33.03	2.1320	8 29 0.0	15.530
10	10 58 15.56	2.0405	3 55 17.8	15.651	10	12 37 41.07	2.1360	8 44 30.7	15.494
11	11 0 17.99	2.0405	3 39 37.9	15.676	11	12 39 49.35	2.1401	8 59 59.3	15.457
12	11 2 20.42	2.0405	3 23 56.4	15.704	12	12 41 57.88	2.1443	9 15 25.6	15.418
13	11 4 22.85	2.0406	3 8 13.4	15.729	13	12 44 6.67	2.1486	9 30 49.5	15.377
14	11 6 25.29	2.0409	2 52 28.9	15.752	14	12 46 15.72	2.1530	9 46 10.9	15.335
15	11 8 27.75	2.0412	2 36 43.1	15.774	15	12 48 25.03	2.1574	10 1 29.7	15.292
16	11 10 30.23	2.0415	2 20 56.0	15.795	16	12 50 34.61	2.1620	10 16 45.9	15.247
17	11 12 32.73	2.0419	2 5 7.7	15.815	17	12 52 44.47	2.1667	10 31 59.3	15.200
18	11 14 35.26	2.0424	1 49 18.2	15.833	18	12 54 54.62	2.1715	10 47 9.9	15.152
19	11 16 37.82	2.0431	1 33 27.7	15.851	19	12 57 5.05	2.1765	11 2 17.5	15.102
20	11 18 40.43	2.0438	1 17 36.1	15.867	20	12 59 15.77	2.1811	11 17 22.1	15.051
21	11 20 43.08	2.0446	1 1 43.6	15.882	21	13 1 26.78	2.1860	11 32 23.6	14.998
22	11 22 45.78	2.0455	0 45 50.3	15.895	22	13 3 38.09	2.1911	11 47 21.8	14.943
23	11 24 48.54	2.0465	N. 0 29 56.2	15.907	23	13 5 49.71	2.1962	S. 12 2 16.7	14.887
SATURDAY 26.					MONDAY 28.				
0	11 26 51.36	2.0475	N. 0 14 1.4	15.918	0	13 8 1.63	2.2013	S. 12 17 8.2	14.829
1	11 28 54.24	2.0487	S. 0 1 54.0	15.928	1	13 10 13.87	2.2066	12 31 56.2	14.769
2	11 30 57.20	2.0499	0 17 50.0	15.937	2	13 12 26.43	2.2119	12 46 40.5	14.708
3	11 33 0.23	2.0512	0 33 46.4	15.945	3	13 14 39.30	2.2172	13 1 21.1	14.645
4	11 35 3.34	2.0526	0 49 43.2	15.949	4	13 16 52.50	2.2227	13 15 57.9	14.581
5	11 37 6.54	2.0541	1 5 40.3	15.954	5	13 19 6.03	2.2283	13 30 30.8	14.514
6	11 39 9.83	2.0557	1 21 37.7	15.957	6	13 21 19.90	2.2340	13 44 59.6	14.446
7	11 41 13.22	2.0573	1 37 35.2	15.959	7	13 23 34.11	2.2397	13 59 24.3	14.377
8	11 43 16.71	2.0591	1 53 32.8	15.960	8	13 25 48.66	2.2454	14 13 44.8	14.306
9	11 45 20.31	2.0609	2 9 30.4	15.959	9	13 28 3.55	2.2511	14 28 1.0	14.232
10	11 47 24.02	2.0628	2 25 27.9	15.957	10	13 30 18.79	2.2570	14 42 12.7	14.157
11	11 49 27.85	2.0649	2 41 25.2	15.953	11	13 32 34.39	2.2629	14 56 19.9	14.081
12	11 51 31.81	2.0671	2 57 22.3	15.949	12	13 34 50.34	2.2688	15 10 22.4	14.005
13	11 53 35.90	2.0695	3 13 19.1	15.943	13	13 37 6.65	2.2749	15 24 20.2	13.928
14	11 55 40.12	2.0715	3 29 15.5	15.936	14	13 39 23.33	2.2811	15 38 13.2	13.842
15	11 57 44.48	2.0739	3 45 11.4	15.927	15	13 41 40.38	2.2872	15 52 1.2	13.758
16	11 59 48.98	2.0763	4 1 6.7	15.917	16	13 43 57.80	2.2934	16 5 44.2	13.673
17	12 1 53.64	2.0790	4 17 1.4	15.906	17	13 46 15.59	2.2997	16 19 22.0	13.586
18	12 3 58.46	2.0817	4 32 55.4	15.892	18	13 48 33.76	2.3060	16 32 54.5	13.497
19	12 6 3.44	2.0844	4 48 48.5	15.878	19	13 50 52.31	2.3123	16 46 21.6	13.407
20	12 8 8.58	2.0871	5 4 40.8	15.863	20	13 53 11.24	2.3187	16 59 43.3	13.315
21	12 10 13.89	2.0900	5 20 32.1	15.846	21	13 55 30.56	2.3252	17 12 59.4	13.221
22	12 12 19.38	2.0931	5 36 22.3	15.827	22	13 57 50.27	2.3317	17 26 9.8	13.125
23	12 14 25.06	2.0962	5 52 11.4	15.807	23	14 0 10.37	2.3382	17 39 14.4	13.027
24	12 16 30.92	2.0993	S. 6 7 59.2	15.786	24	14 2 30.85	2.3447	S. 17 52 13.1	12.928

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 29.					THURSDAY 31.				
0	14 2 30.85	2.3447	S. 17 52 13.1	12.928	0	16 2 34.92	2.6412	S. 25 44 19.5	6.100
1	14 4 51.73	2.3513	18 5 5.8	12.827	1	16 5 13.52	2.6455	25 50 20.1	5.921
2	14 7 13.01	2.3579	18 17 52.3	12.723	2	16 7 52.38	2.6497	25 56 10.0	5.741
3	14 9 34.68	2.3645	18 30 32.6	12.618	3	16 10 31.49	2.6538	26 1 49.0	5.559
4	14 11 56.75	2.3712	18 43 6.5	12.518	4	16 13 10.84	2.6577	26 7 17.1	5.376
5	14 14 19.23	2.3780	18 55 34.0	12.403	5	16 15 50.41	2.6614	26 12 34.1	5.191
6	14 16 42.11	2.3847	19 7 54.9	12.298	6	16 18 30.21	2.6651	26 17 40.0	5.006
7	14 19 5.39	2.3914	19 20 9.1	12.180	7	16 21 10.23	2.6686	26 22 34.8	4.821
8	14 21 29.08	2.3982	19 32 16.5	12.067	8	16 23 50.44	2.6718	26 27 18.5	4.634
9	14 23 53.17	2.4049	19 44 17.1	11.952	9	16 26 30.84	2.6748	26 31 50.9	4.446
10	14 26 17.67	2.4117	19 56 10.7	11.833	10	16 29 11.42	2.6778	26 36 12.0	4.257
11	14 28 42.57	2.4184	20 7 57.1	11.713	11	16 31 52.18	2.6807	26 40 21.8	4.068
12	14 31 7.88	2.4252	20 19 36.3	11.592	12	16 34 33.11	2.6834	26 44 20.2	3.878
13	14 33 33.60	2.4320	20 31 8.2	11.469	13	16 37 14.19	2.6858	26 48 7.2	3.688
14	14 35 59.72	2.4388	20 42 32.6	11.344	14	16 39 55.41	2.6882	26 51 42.7	3.497
15	14 38 26.25	2.4456	20 53 49.5	11.218	15	16 42 36.77	2.6903	26 55 6.8	3.306
16	14 40 53.19	2.4523	21 4 58.8	11.090	16	16 45 18.25	2.6922	26 58 19.4	3.113
17	14 43 20.53	2.4590	21 16 0.3	10.959	17	16 47 59.84	2.6941	27 1 20.4	2.919
18	14 45 48.27	2.4658	21 26 53.9	10.827	18	16 50 41.54	2.6957	27 4 9.7	2.725
19	14 48 16.42	2.4725	21 37 39.5	10.693	19	16 53 23.33	2.6971	27 6 47.4	2.532
20	14 50 44.97	2.4791	21 48 17.1	10.558	20	16 56 5.19	2.6983	27 9 13.5	2.338
21	14 53 13.91	2.4857	21 58 46.5	10.421	21	16 58 47.12	2.6993	27 11 28.0	2.144
22	14 55 43.25	2.4923	22 9 7.6	10.282	22	17 1 29.11	2.7002	27 13 30.8	1.949
23	14 58 12.99	2.4990	S. 22 19 20.3	10.141	23	17 4 11.14	2.7008	S. 27 15 21.9	1.753
WEDNESDAY 30.					FRIDAY, JANUARY 1, 1897.				
0	15 0 43.13	2.5056	S. 22 29 24.5	9.998	0	17 6 53.20	2.7013	S. 27 17 1.2	1.557
1	15 3 13.66	2.5120	22 39 20.1	9.854	PHASES OF THE MOON.				
2	15 5 44.57	2.5184	22 49 7.0	9.707					
3	15 8 15.87	2.5248	22 58 45.0	9.559					
4	15 10 47.55	2.5313	23 8 14.1	9.410					
5	15 13 19.62	2.5377	23 17 34.2	9.260	● New Moon Dec. 4 5 51.0 ☽ First Quarter 11 12 29.3 ○ Full Moon 19 16 5.3 ☾ Last Quarter 27 0 8.6				
6	15 15 52.07	2.5439	23 26 45.3	9.108					
7	15 18 24.89	2.5500	23 35 47.1	8.953					
8	15 20 58.07	2.5561	23 44 39.6	8.797					
9	15 23 31.62	2.5622	23 53 22.7	8.639	☾ Perigee Dec. 2 14.4 ☾ Apogee 14 12.0 ☾ Perigee 30 12.4				
10	15 26 5.53	2.5681	24 1 56.3	8.480					
11	15 28 39.79	2.5739	24 10 20.3	8.320					
12	15 31 14.40	2.5797	24 18 34.7	8.158					
13	15 33 49.36	2.5855	24 26 39.3	7.994					
14	15 36 24.66	2.5911	24 34 34.0	7.828					
15	15 39 0.29	2.5966	24 42 18.7	7.661					
16	15 41 36.25	2.6020	24 49 53.3	7.493					
17	15 44 12.53	2.6072	24 57 17.9	7.325					
18	15 46 49.12	2.6124	25 4 32.3	7.154					
19	15 49 26.02	2.6176	25 11 36.4	6.982					
20	15 52 3.23	2.6226	25 18 30.1	6.808					
21	15 54 40.73	2.6274	25 25 13.3	6.633					
22	15 57 18.51	2.6321	25 31 46.0	6.457					
23	15 59 56.58	2.6367	25 38 8.1	6.279					
24	16 2 34.92	2.6412	S. 25 44 19.5	6.100					

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	Pollux	W.	93 23 50	2124	95 14 13	2116	97 4 47	2109	98 55 32	2102
	Regulus	W.	56 27 28	2113	58 18 8	2105	60 9 0	2098	62 0 3	2091
	JUPITER	W.	45 40 55	2142	47 30 50	2134	49 20 57	2126	51 11 16	2119
	SUN	E.	45 21 2	2450	43 38 38	2443	41 56 5	2438	40 13 24	2433
2	Regulus	W.	71 17 34	2066	73 9 25	2063	75 1 21	2061	76 53 21	2059
	JUPITER	W.	60 25 18	2092	62 16 29	2089	64 7 45	2086	65 59 5	2084
	SUN	E.	31 38 45	2425	29 55 46	2428	28 12 51	2432	26 30 2	2438
6	SUN	W.	23 56 45	2624	25 33 46	2622	27 10 36	2703	28 47 12	2715
	Fomalhaut	E.	55 11 32	2819	53 37 29	2860	52 4 19	2904	50 32 5	2952
	α Pegasi	E.	75 27 18	2478	73 45 34	2498	72 4 18	2518	70 23 30	2538
7	SUN	W.	36 45 51	2788	38 20 35	2805	39 54 57	2822	41 28 56	2839
	α Pegasi	E.	62 7 3	2656	60 29 24	2682	58 52 20	2709	57 15 52	2737
	α Arietis	E.	103 43 37	2433	102 0 50	2432	100 18 29	2470	98 36 33	2487
8	SUN	W.	49 13 8	2931	50 44 48	2930	52 16 4	2968	53 46 57	2986
	α Arietis	E.	90 13 10	2578	88 33 45	2596	86 54 45	2615	85 16 10	2632
	Aldebaran	E.	121 54 19	2657	120 16 41	2672	118 39 24	2687	117 2 27	2702
9	SUN	W.	61 15 35	3078	62 44 11	3096	64 12 25	3114	65 40 17	3132
	α Arietis	E.	77 9 16	2721	75 33 4	2738	73 57 15	2755	72 21 48	2772
	Aldebaran	E.	109 2 51	2781	107 27 58	2796	105 53 25	2812	104 19 13	2828
10	SUN	W.	72 54 29	3214	74 20 21	3231	75 45 54	3245	77 11 10	3260
	VENUS	W.	34 52 21	3271	36 17 6	3288	37 41 32	3304	39 5 39	3319
	α Arietis	E.	64 29 56	2852	62 56 35	2867	61 23 34	2882	59 50 52	2897
	Aldebaran	E.	96 33 7	2902	95 0 51	2916	93 28 53	2930	91 57 12	2944
	MARS	E.	108 2 44	2700	106 26 4	2714	104 49 43	2728	103 13 40	2741
11	SUN	W.	84 13 16	3328	85 36 55	3340	87 0 20	3352	88 23 31	3364
	α Aquilæ	W.	49 38 5	4199	50 46 32	4155	51 55 41	4116	53 5 27	4081
	VENUS	W.	46 2 2	3388	47 24 32	3401	48 46 47	3413	50 8 49	3424
	α Arietis	E.	52 11 50	2964	50 40 52	2976	49 10 9	2989	47 39 42	3000
	Aldebaran	E.	84 23 0	3008	82 52 57	3019	81 23 8	3031	79 53 34	3042
	MARS	E.	95 17 42	2803	93 43 18	2814	92 9 8	2825	90 35 12	2835
12	SUN	W.	95 16 25	3412	96 38 28	3421	98 0 21	3429	99 22 5	3436
	α Aquilæ	W.	59 1 53	3948	60 14 24	3927	61 27 16	3910	62 40 26	3892
	VENUS	W.	56 55 55	3474	58 16 48	3482	59 37 32	3490	60 58 7	3498
	α Arietis	E.	40 10 58	3056	38 41 54	3065	37 13 2	3073	35 44 22	3085
	Aldebaran	E.	72 28 58	3092	71 0 39	3101	69 32 31	3110	68 4 33	3118
	MARS	E.	82 48 37	2879	81 15 51	2886	79 43 14	2894	78 10 47	2900
13	SUN	W.	106 8 55	3464	107 29 59	3469	108 50 58	3472	110 11 53	3475
	α Aquilæ	W.	68 50 10	3825	70 4 46	3816	71 19 32	3805	72 34 29	3796
	VENUS	W.	67 39 9	3526	68 59 4	3511	70 18 54	3535	71 38 40	3538
	Fomalhaut	W.	43 9 40	3847	44 23 54	3810	45 38 46	3777	46 54 12	3746
	Aldebaran	E.	60 47 7	3155	59 20 4	3162	57 53 9	3168	56 26 22	3175
	MARS	E.	70 30 24	2927	68 58 39	2910	67 26 58	2934	65 55 22	2936
	Pollux	E.	102 57 43	3076	101 29 4	3080	100 0 30	3082	98 31 59	3086

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	Pollux W.	100 46 27	2097	102 37 31	2092	104 28 43	2087	106 20 2	2083
	Regulus W.	63 51 16	2085	65 42 39	2079	67 34 10	2074	69 25 49	2070
	JUPITER W.	53 1 46	2113	54 52 26	2106	56 43 16	2101	58 34 13	2096
	SUN E.	38 30 36	2429	36 47 43	2426	35 4 45	2424	33 21 45	2424
2	Regulus W.	78 45 24	2057	80 37 29	2057	82 29 34	2057	84 21 39	2057
	JUPITER W.	67 50 29	2083	69 41 55	2082	71 33 22	2081	73 24 50	2080
	SUN E.	24 47 21	2447	23 4 53	2460	21 22 43	2477	19 40 57	2499
6	SUN W.	30 23 32	2728	31 59 35	2741	33 35 20	2756	35 10 46	2772
	Fomalhaut E.	49 0 52	3002	47 30 42	3037	46 1 40	3116	44 33 50	3181
	α Pegasi E.	68 43 10	2960	67 3 20	2983	65 24 2	2607	63 45 16	2631
7	SUN W.	43 2 33	2837	44 35 47	2876	46 8 37	2894	47 41 4	2912
	α Pegasi E.	55 40 1	2766	54 4 49	2796	52 30 16	2828	50 56 24	2861
	α Arietis E.	96 55 2	2505	95 13 56	2524	93 33 16	2541	91 53 0	2560
8	SUN W.	55 17 27	3005	56 47 34	3024	58 17 17	3043	59 46 37	3060
	α Arietis E.	83 37 59	2651	82 0 13	2668	80 22 50	2686	78 45 51	2704
	Aldebaran E.	115 25 50	2718	113 49 34	2734	112 13 39	2750	110 38 5	2765
9	SUN W.	67 7 48	3149	68 34 58	3166	70 1 48	3183	71 28 18	3198
	α Arietis E.	70 46 43	2788	69 12 0	2805	67 37 38	2821	66 3 37	2836
	Aldebaran E.	102 45 21	2843	101 11 49	2858	99 38 36	2873	98 5 42	2887
10	SUN W.	78 36 8	3275	80 0 49	3288	81 25 14	3302	82 49 23	3316
	VENUS W.	40 29 29	3333	41 53 2	3348	43 16 18	3362	44 39 18	3376
	α Arietis E.	58 18 29	2910	56 46 23	2924	55 14 35	2938	53 43 4	2951
	Aldebaran E.	90 25 49	2957	88 54 42	2970	87 23 52	2983	85 53 18	2996
	Mars E.	101 37 55	2754	100 2 27	2767	98 27 16	2779	96 52 21	2792
11	SUN W.	89 46 29	3374	91 9 15	3385	92 31 49	3394	93 54 12	3403
	α Aquilæ W.	54 15 47	4049	55 26 38	4020	56 37 58	3993	57 49 44	3970
	VENUS W.	51 30 38	3436	52 52 14	3446	54 13 39	3456	55 34 52	3465
	α Arietis E.	46 9 29	3012	44 39 31	3022	43 9 46	3034	41 40 15	3045
	Aldebaran E.	78 24 13	3053	76 55 6	3063	75 26 11	3073	73 57 29	3082
	Mars E.	89 1 29	2844	87 27 58	2854	85 54 40	2862	84 21 33	2871
12	SUN W.	100 43 41	3442	102 5 10	3449	103 26 31	3454	104 47 46	3460
	α Aquilæ W.	63 53 54	3877	65 7 37	3862	66 21 35	3850	67 35 46	3837
	VENUS W.	62 18 33	3505	63 38 52	3511	64 59 4	3517	66 19 9	3522
	α Arietis E.	34 15 55	3096	32 47 40	3106	31 19 38	3116	29 51 48	3127
	Aldebaran E.	66 36 45	3126	65 9 7	3133	63 41 38	3141	62 14 18	3148
	Mars E.	76 38 28	2906	75 6 17	2912	73 34 13	2916	72 2 15	2922
13	SUN W.	111 32 45	3479	112 53 33	3480	114 14 19	3482	115 35 3	3484
	α Aquilæ W.	73 49 35	3788	75 4 50	3780	76 20 13	3773	77 35 43	3766
	VENUS W.	72 58 22	3540	74 18 2	3543	75 37 39	3544	76 57 15	3545
	Fomalhaut W.	48 10 11	3718	49 26 39	3692	50 43 35	3667	52 0 57	3646
	Aldebaran E.	54 59 43	3181	53 33 11	3187	52 6 46	3193	50 40 28	3199
	Mars E.	64 23 49	2939	62 52 20	2941	61 20 53	2943	59 49 29	2944
	Pollux E.	97 3 32	3088	95 35 8	3090	94 6 46	3091	92 38 26	3092

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
14	α Aquilæ W.	78 51 21	3760	80 7 5	3753	81 22 56	3747	82 38 53	3743
	VENUS W.	78 16 49	3545	79 36 23	3546	80 55 56	3545	82 15 30	3545
	Fomalhaut W.	53 18 42	3685	54 36 49	3605	55 55 18	3597	57 14 7	3579
	Aldebaran E.	49 14 18	3804	47 48 14	3811	46 22 18	3818	44 56 30	3824
	MARS E.	58 18 6	3945	56 46 44	3946	55 15 23	3946	53 44 2	3945
	Pollux E.	91 10 7	3093	89 41 49	3093	88 13 31	3092	86 45 12	3092
15	α Aquilæ W.	88 59 50	3783	90 16 13	3719	91 32 40	3717	92 49 9	3714
	VENUS W.	88 53 42	3535	90 13 28	3531	91 33 18	3527	92 53 12	3523
	Fomalhaut W.	63 52 33	3496	65 13 2	3483	66 33 45	3470	67 54 43	3458
	α Pegasi W.	41 26 44	3494	42 47 15	3468	44 8 15	3444	45 29 42	3428
	MARS E.	46 6 59	3958	44 35 28	3935	43 3 54	3932	41 32 16	3930
	Pollux E.	79 23 19	3083	77 54 49	3080	76 26 15	3078	74 57 38	3073
16	Fomalhaut W.	74 42 48	3402	76 5 2	3393	77 27 27	3382	78 50 4	3372
	α Pegasi W.	52 22 54	3385	53 46 36	3309	55 10 37	3293	56 34 57	3278
	Pollux E.	67 33 19	3052	66 4 10	3047	64 34 55	3041	63 5 33	3036
	Regulus E.	104 26 40	3057	102 57 13	3032	101 27 40	3026	99 58 0	3020
17	Fomalhaut W.	85 45 49	3328	87 9 28	3319	88 33 17	3312	89 57 15	3303
	α Pegasi W.	63 40 51	3209	65 6 50	3196	66 33 4	3183	67 59 34	3171
	Pollux E.	55 36 56	3005	54 6 49	2998	52 36 34	2991	51 6 10	2985
	Regulus E.	92 27 38	2985	90 57 7	2978	89 26 27	2971	87 55 38	2963
18	α Pegasi W.	75 15 38	3112	76 43 33	3101	78 11 41	3091	79 40 2	3080
	α Arietis W.	32 0 2	2977	33 30 44	2965	35 1 43	2951	36 32 57	2939
	Pollux E.	43 32 4	2950	42 0 49	2943	40 29 25	2937	38 57 53	2931
	Regulus E.	80 19 2	2922	78 47 11	2914	77 15 10	2905	75 42 58	2896
	JUPITER E.	91 57 44	2935	90 26 9	2926	88 54 23	2917	87 22 26	2909
19	α Pegasi W.	87 4 58	3090	88 34 34	3021	90 4 21	3012	91 34 19	3002
	α Arietis W.	44 12 51	2882	45 45 33	2872	47 18 28	2861	48 51 37	2851
	Regulus E.	67 59 7	2852	66 25 46	2843	64 52 14	2834	63 18 30	2825
	JUPITER E.	79 39 51	2863	78 6 45	2855	76 33 28	2845	74 59 59	2836
20	α Arietis W.	56 40 42	2799	58 15 11	2790	59 49 52	2780	61 24 46	2771
	Regulus E.	55 26 54	2779	53 51 59	2771	52 16 53	2762	50 41 35	2753
	JUPITER E.	67 9 35	2791	65 34 55	2782	64 0 3	2772	62 24 59	2764
	Spica E.	109 29 28	2782	107 54 37	2773	106 19 34	2764	104 44 19	2755
21	α Arietis W.	69 22 22	2724	70 58 30	2715	72 34 50	2705	74 11 23	2697
	Aldebaran W.	38 11 43	2886	39 44 20	2866	41 17 23	2846	42 50 51	2826
	MARS W.	29 42 4	2602	31 20 56	2594	32 59 59	2585	34 39 14	2577
	Regulus E.	42 42 11	2710	41 5 44	2701	39 29 5	2692	37 52 15	2684
	JUPITER E.	54 26 47	2720	52 50 34	2712	51 14 10	2704	49 37 35	2695
	Spica E.	96 45 7	2710	95 8 41	2701	93 32 3	2693	91 55 14	2684
22	α Arietis W.	82 17 2	2654	83 54 44	2645	85 32 38	2637	87 10 43	2628
	Aldebaran W.	50 43 36	2752	52 19 7	2738	53 54 56	2726	55 31 1	2713
	MARS W.	42 58 20	2536	44 38 43	2528	46 19 17	2520	48 0 2	2513
	JUPITER E.	41 31 58	2657	39 54 20	2649	38 16 32	2642	36 38 34	2635
	Spica E.	83 48 15	2642	82 10 17	2634	80 32 8	2626	78 53 48	2618

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
14	α Aquilæ W.	83 54 55	3738	85 11 2	3733	86 27 14	3729	87 43 30	3726
	VENUS W.	83 35 5	3544	84 54 41	3542	86 14 19	3540	87 33 59	3537
	Fomalhaut W.	58 33 14	3554	59 52 39	3538	61 12 21	3524	62 32 19	3509
	Aldebaran E.	43 30 49	3231	42 5 17	3238	40 39 53	3247	39 14 39	3235
	MARS E.	52 12 40	2944	50 41 17	2943	49 9 53	2942	47 38 27	2940
	Pollux E.	85 16 53	3091	83 48 32	3090	82 20 10	3088	80 51 46	3086
15	α Aquilæ W.	94 5 41	3713	95 22 14	3711	96 38 49	3711	97 55 24	3711
	VENUS W.	94 13 11	3518	95 33 15	3514	96 53 24	3508	98 13 39	3503
	Fomalhaut W.	69 15 54	3446	70 37 19	3435	71 58 56	3423	73 20 46	3413
	α Pegasi W.	46 51 34	3400	48 13 50	3379	49 36 30	3360	50 59 32	3343
	MARS E.	40 0 35	2926	38 28 49	2923	36 56 59	2918	35 25 3	2914
	Pollux E.	73 28 56	3070	72 0 10	3065	70 31 18	3061	69 2 21	3057
16	Fomalhaut W.	80 12 52	3363	81 35 51	3354	82 59 0	3345	84 22 20	3337
	α Pegasi W.	57 59 34	3263	59 24 29	3249	60 49 40	3235	62 15 8	3222
	Pollux E.	61 36 5	3030	60 6 29	3024	58 36 46	3018	57 6 55	3011
	Regulus E.	98 28 12	3014	96 58 16	3007	95 28 12	3000	93 57 59	2993
17	Fomalhaut W.	91 21 23	3296	92 45 39	3288	94 10 4	3282	95 34 36	3276
	α Pegasi W.	69 26 18	3158	70 53 17	3147	72 20 30	3135	73 47 57	3124
	Pollux E.	49 35 38	2977	48 4 57	2971	46 34 8	2964	45 3 10	2958
	Regulus E.	86 24 39	2955	84 53 30	2947	83 22 11	2939	81 50 42	2931
18	α Pegasi W.	81 8 36	3069	82 37 23	3060	84 6 22	3049	85 35 34	3039
	α Arietis W.	38 4 27	2927	39 36 11	2916	41 8 10	2905	42 40 23	2893
	Pollux E.	37 26 13	2924	35 54 25	2919	34 22 30	2913	32 50 28	2907
	Regulus E.	74 10 34	2887	72 37 59	2879	71 5 13	2870	69 32 16	2861
	JUPITER E.	85 50 18	2899	84 17 58	2891	82 45 27	2882	81 12 45	2873
19	α Pegasi W.	93 4 29	2994	94 34 49	2985	96 5 20	2977	97 36 1	2970
	α Arietis W.	50 24 59	2840	51 58 35	2830	53 32 24	2820	55 6 26	2809
	Regulus E.	61 44 34	2815	60 10 26	2807	58 36 7	2798	57 1 36	2789
	JUPITER E.	73 26 18	2827	71 52 25	2818	70 18 20	2808	68 44 3	2800
20	α Arietis W.	62 59 52	2761	64 35 11	2752	66 10 42	2742	67 46 26	2733
	Regulus E.	49 6 6	2744	47 30 25	2735	45 54 32	2726	44 18 27	2718
	JUPITER E.	60 49 44	2735	59 14 17	2747	57 38 39	2738	56 2 49	2729
	Spica E.	103 8 53	2747	101 33 15	2737	99 57 24	2728	98 21 21	2719
21	α Arietis W.	75 48 7	2688	77 25 3	2679	79 2 11	2670	80 39 31	2662
	Aldebaran W.	44 24 42	2811	45 58 55	2795	47 33 29	2780	49 8 23	2766
	MARS W.	36 18 40	2569	37 58 18	2561	39 38 7	2552	41 18 8	2544
	Regulus E.	36 15 14	2676	34 38 2	2668	33 0 39	2660	31 23 5	2652
	JUPITER E.	48 0 49	2687	46 23 52	2679	44 46 44	2672	43 9 26	2664
	Spica E.	90 18 13	2676	88 41 1	2667	87 3 37	2659	85 26 2	2650
22	α Arietis W.	88 49 0	2621	90 27 27	2612	92 6 6	2604	93 44 56	2596
	Aldebaran W.	57 7 23	2702	58 44 0	2690	60 20 53	2680	61 58 0	2669
	MARS W.	49 40 57	2504	51 22 4	2497	53 3 21	2489	54 44 49	2482
	JUPITER E.	35 0 27	2629	33 22 11	2623	31 43 47	2617	30 5 15	2611
	Spica E.	77 15 17	2609	75 36 34	2601	73 57 41	2593	72 18 37	2585

GREENWICH MEAN TIME.									
LUNAR DISTANCES.									
Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	α Arietis W.	95 23 57	2588	97 3 9	2580	98 42 31	2572	100 22 4	2565
	Aldebaran W.	63 35 22	2658	65 12 58	2648	66 50 48	2638	68 28 51	2628
	Mars W.	56 26 27	2475	58 8 16	2467	59 50 15	2460	61 32 25	2453
	Spica E.	70 39 22	2577	68 59 56	2570	67 20 20	2562	65 40 33	2554
	SATURN E.	104 30 42	2642	102 52 44	2633	101 14 34	2625	99 36 13	2616
24	Aldebaran W.	76 42 21	2583	78 21 40	2574	80 1 10	2566	81 40 52	2558
	Mars W.	70 5 48	2417	71 48 59	2409	73 32 21	2402	75 15 53	2395
	Pollux W.	34 2 48	2352	35 42 49	2340	37 23 6	2330	39 3 37	2320
	Spica E.	57 18 59	2517	55 38 9	2509	53 57 8	2502	52 15 57	2494
	SATURN E.	91 21 39	2577	89 42 12	2569	88 2 34	2561	86 22 45	2553
	SUN E.	128 9 41	2865	126 36 37	2856	125 3 22	2847	123 29 55	2838
25	Aldebaran W.	90 2 9	2518	91 42 57	2511	93 23 55	2503	95 5 4	2497
	Mars W.	83 56 4	2360	85 40 36	2353	87 25 19	2346	89 10 12	2339
	Pollux W.	47 29 40	2473	49 11 31	2464	50 53 35	2455	52 35 51	2447
	Spica E.	43 47 30	2459	42 5 19	2452	40 22 58	2445	38 40 28	2438
	SATURN E.	78 1 6	2516	76 20 15	2510	74 39 15	2502	72 58 5	2495
	Antares E.	89 34 46	2448	87 52 20	2441	86 9 43	2433	84 26 56	2426
	SUN E.	115 39 52	2795	114 5 18	2786	112 30 32	2779	110 55 36	2769
26	Mars W.	97 57 8	2304	99 43 2	2298	101 29 5	2290	103 15 19	2284
	Pollux W.	61 10 10	2405	62 53 37	2398	64 37 15	2389	66 21 5	2382
	SATURN E.	64 29 49	2462	62 47 42	2455	61 5 26	2450	59 23 2	2443
	Antares E.	75 50 18	2388	74 6 26	2380	72 22 23	2373	70 38 10	2366
	SUN E.	102 58 7	2728	101 22 4	2719	99 45 50	2711	98 9 25	2704
27	Pollux W.	75 3 0	2344	76 47 56	2337	78 33 2	2329	80 18 19	2322
	Regulus W.	38 3 18	2334	39 48 28	2326	41 33 50	2319	43 19 22	2311
	SATURN E.	50 49 1	2418	49 5 52	2414	47 22 37	2410	45 39 17	2408
	Antares E.	61 54 24	2329	60 9 7	2322	58 23 40	2315	56 38 3	2309
	SUN E.	90 4 40	2663	88 27 11	2656	86 49 32	2649	85 11 43	2640
28	Pollux W.	89 7 15	2289	90 53 31	2283	92 39 56	2277	94 26 30	2270
	Regulus W.	52 9 36	2278	53 56 8	2271	55 42 50	2265	57 29 41	2259
	JUPITER W.	40 32 35	2287	42 18 53	2281	44 5 21	2273	45 52 0	2266
	Antares E.	47 47 28	2275	46 0 52	2269	44 14 7	2263	42 27 13	2257
	SUN E.	77 0 6	2605	75 21 18	2598	73 42 20	2591	72 3 13	2585
29	Regulus W.	66 26 3	2233	68 13 42	2227	70 1 29	2223	71 49 22	2218
	JUPITER W.	54 47 37	2237	56 35 10	2231	58 22 51	2226	60 10 40	2222
	Antares E.	33 30 36	2230	31 42 53	2226	29 55 4	2221	28 7 8	2217
	SUN E.	63 45 37	2557	62 5 43	2553	60 25 43	2548	58 45 36	2544
30	Regulus W.	80 50 13	2203	82 38 36	2200	84 27 3	2198	86 15 33	2197
	JUPITER W.	69 11 14	2204	70 59 36	2201	72 48 2	2199	74 36 31	2198
	SUN E.	50 23 44	2587	48 43 9	2526	47 2 32	2525	45 21 53	2523
31	Regulus W.	95 18 23	2196	97 6 57	2197	98 55 29	2198	100 43 59	2200
	JUPITER W.	83 39 21	2195	85 27 56	2196	87 16 29	2198	89 5 0	2199
	Spica W.	41 18 3	2205	43 6 23	2205	44 54 43	2206	46 43 2	2208
	SUN E.	36 58 30	2526	35 17 53	2529	33 37 20	2532	31 56 51	2535

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
23	α Arietis W.	102 1 47	2557	103 41 41	2550	105 21 45	2544	107 2 0	2535
	Aldebaran W.	70 7 8	2618	71 45 38	2610	73 24 20	2601	75 3 14	2591
	MARS W.	63 14 45	2445	64 57 15	2438	66 39 56	2431	68 22 47	2424
	Spica E.	64 0 35	2547	62 20 27	2539	60 40 8	2532	58 59 39	2524
	SATURN E.	97 57 40	2608	96 18 56	2600	94 40 1	2592	93 0 55	2585
24	Aldebaran W.	83 20 45	2550	85 0 49	2541	86 41 5	2533	88 21 32	2526
	MARS W.	76 59 35	2588	78 43 27	2581	80 27 29	2574	82 11 41	2566
	Pollux W.	40 44 23	2510	42 25 22	2500	44 6 35	2491	45 48 1	2482
	Spica E.	50 34 36	2487	48 53 5	2480	47 11 23	2472	45 29 31	2466
	SATURN E.	84 42 46	2546	83 2 37	2538	81 22 17	2531	79 41 47	2523
	SUN E.	121 56 17	2830	120 22 28	2821	118 48 27	2812	117 14 15	2804
25	Aldebaran W.	96 46 22	2489	98 27 50	2482	100 9 28	2476	101 51 15	2469
	MARS W.	90 55 15	2332	92 40 28	2325	94 25 51	2318	96 11 24	2311
	Pollux W.	54 18 19	2438	56 0 59	2430	57 43 51	2422	59 26 55	2414
	Spica E.	36 57 48	2432	35 14 59	2426	33 32 1	2419	31 48 54	2413
	SATURN E.	71 16 45	2488	69 35 15	2482	67 53 36	2475	66 11 47	2468
	Antares E.	82 43 58	2418	81 0 49	2410	79 17 29	2403	77 33 59	2396
	SUN E.	109 20 28	2762	107 45 10	2753	106 9 40	2744	104 33 59	2736
26	MARS W.	105 1 42	2277	106 48 16	2270	108 34 59	2264	110 21 52	2257
	Pollux W.	68 5 6	2374	69 49 18	2366	71 33 41	2359	73 18 15	2351
	SATURN E.	57 40 29	2438	55 57 48	2433	54 15 0	2427	52 32 4	2422
	Antares E.	68 53 46	2358	67 9 11	2351	65 24 26	2344	63 39 30	2337
	SUN E.	96 32 50	2695	94 56 3	2687	93 19 6	2679	91 41 58	2672
27	Pollux W.	82 3 46	2315	83 49 24	2309	85 35 11	2302	87 21 8	2295
	Regulus W.	45 5 5	2304	46 50 58	2298	48 37 1	2291	50 23 14	2285
	SATURN E.	43 55 53	2405	42 12 25	2403	40 28 55	2402	38 45 23	2401
	Antares E.	54 52 16	2302	53 6 19	2295	51 20 12	2288	49 33 55	2281
	SUN E.	83 33 43	2653	81 55 33	2646	80 17 14	2639	78 38 45	2632
28	Pollux W.	96 13 13	2265	98 0 4	2260	99 47 3	2254	101 34 10	2249
	Regulus W.	59 16 41	2253	61 3 49	2247	62 51 6	2242	64 38 31	2237
	JUPITER W.	47 38 49	2260	49 25 47	2253	51 12 55	2247	53 0 12	2242
	Antares E.	40 40 10	2251	38 52 59	2245	37 5 39	2240	35 18 11	2235
	SUN E.	70 23 58	2580	68 44 35	2573	67 5 3	2568	65 25 24	2562
29	Regulus W.	73 37 22	2215	75 25 27	2211	77 13 38	2208	79 1 53	2205
	JUPITER W.	61 58 35	2217	63 46 37	2214	65 34 44	2210	67 22 56	2206
	Antares E.	26 19 6	2214	24 30 59	2210	22 42 46	2206	20 54 28	2204
	SUN E.	57 5 24	2540	55 25 6	2536	53 44 43	2533	52 4 15	2530
30	Regulus W.	88 4 5	2196	89 52 38	2195	91 41 13	2195	93 29 48	2195
	JUPITER W.	76 25 2	2196	78 13 35	2195	80 2 10	2195	81 50 45	2194
	SUN E.	43 41 12	2523	42 0 31	2523	40 19 50	2523	38 39 9	2523
31	Regulus W.	102 32 26	2202	104 20 50	2206	106 9 9	2209	107 57 23	2213
	JUPITER W.	90 53 29	2202	92 41 54	2204	94 30 15	2208	96 18 31	2211
	Spica W.	48 31 18	2210	50 19 31	2212	52 7 41	2214	53 55 47	2218
	SUN E.	30 16 26	2540	28 36 8	2545	26 55 57	2551	25 15 55	2560

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s	s	° ' "	"	h m	1	h m s	s	° ' "	"	h m
1	19 17 23.55	+17.807	-24 23 22.0	+29.29	0 34.9	1	21 48 49.07	-3.918	-10 50 43.6	+23.88	1 3.8
2	19 24 30.67	17.784	24 10 51.8	33.22	0 38.1	2	21 46 54.55	3.611	10 43 20.8	12.98	0 57.9
3	19 31 37.08	17.749	23 56 47.3	37.15	0 41.2	3	21 44 20.69	7.185	10 40 21.1	+2.00	0 51.4
4	19 38 42.50	17.700	23 41 8.3	41.10	0 44.4	4	21 41 11.03	8.588	10 41 42.9	-8.75	0 44.3
5	19 45 46.58	17.637	23 23 54.5	45.05	0 47.5	5	21 37 30.23	9.771	10 47 16.4	18.93	0 36.7
6	19 52 48.94	+17.557	-23 5 6.1	+48.98	0 50.6	6	21 33 24.11	-10.692	-10 56 44.5	-28.23	0 28.7
7	19 59 49.17	17.459	22 44 43.7	52.88	0 53.7	7	21 28 59.37	11.321	11 9 42.3	36.39	0 20.4
8	20 6 46.80	17.339	22 22 48.0	56.75	0 56.7	8	21 24 23.34	11.635	11 25 39.6	43.19	0 11.9
9	20 13 41.27	17.196	21 59 20.4	60.54	0 59.7	9	21 19 43.54	11.632	11 44 2.6	48.48	0 3.1
10	20 20 32.00	17.087	21 34 22.6	64.26	1 2.6	10	21 15 7.34	11.336	12 4 14.9	52.29	23 46.6
11	20 27 18.31	+16.887	-21 7 56.8	+67.87	1 5.4	11	21 10 41.55	-10.770	-12 25 41.0	-54.63	23 38.5
12	20 33 59.44	16.594	20 40 6.0	71.34	1 8.2	12	21 6 32.21	9.973	12 47 46.3	55.61	23 30.8
13	20 40 34.50	16.321	20 10 54.1	74.64	1 10.8	13	21 2 44.33	8.990	13 10 0.6	55.39	23 23.5
14	20 47 2.51	16.005	19 40 25.5	77.82	1 13.3	14	20 59 21.84	7.864	13 31 56.9	54.13	23 16.6
15	20 53 22.33	15.638	19 8 45.8	80.54	1 15.7	15	20 56 27.61	6.644	13 53 12.9	52.07	23 10.3
16	20 59 32.69	+15.215	-18 36 2.3	+83.03	1 17.9	16	20 54 3.38	-5.369	-14 13 30.9	-49.33	23 4.5
17	21 5 32.14	14.728	18 2 23.3	85.16	1 20.0	17	20 52 10.08	4.072	14 32 36.6	46.08	22 59.2
18	21 11 19.08	14.170	17 27 58.4	86.84	1 21.8	18	20 50 47.86	2.783	14 50 19.5	42.45	22 54.4
19	21 16 51.67	13.532	16 52 59.4	87.99	1 23.4	19	20 49 56.28	1.522	15 6 32.1	38.56	22 50.0
20	21 22 7.89	12.805	16 17 39.5	88.55	1 24.7	20	20 49 34.43	-0.308	15 21 9.0	34.50	22 46.2
21	21 27 5.53	+11.982	-15 42 14.5	+88.41	1 25.7	21	20 49 41.06	+0.851	-15 34 7.1	-30.32	22 42.8
22	21 31 42.16	11.052	15 7 1.9	87.49	1 26.3	22	20 50 14.77	1.947	15 45 24.1	26.09	22 39.8
23	21 35 55.16	10.012	14 32 21.5	85.70	1 26.6	23	20 51 13.99	2.975	15 54 59.2	21.84	22 37.3
24	21 39 41.79	8.854	13 58 35.0	82.97	1 26.4	24	20 52 37.05	3.935	16 2 52.2	17.58	22 35.1
25	21 42 59.17	7.575	13 26 6.2	79.23	1 25.7	25	20 54 22.32	4.827	16 9 3.3	13.35	22 33.2
26	21 45 44.44	+6.178	-12 55 20.4	+74.41	1 24.5	26	20 56 28.24	+5.655	-16 13 33.5	-9.17	22 31.7
27	21 47 54.81	4.668	12 26 43.5	68.48	1 22.7	27	20 58 53.27	6.420	16 16 23.9	5.03	22 30.4
28	21 49 27.71	3.057	12 0 42.3	61.44	1 20.3	28	21 1 35.92	7.125	16 17 35.3	-0.94	22 29.4
29	21 50 20.89	+1.565	11 37 42.9	53.34	1 17.2	29	21 4 34.82	7.775	16 17 9.2	+3.10	22 28.7
30	21 50 32.69	-0.388	11 18 9.5	44.28	1 13.4	30	21 7 48.69	8.378	16 15 6.8	7.09	22 28.2
31	21 50 2.10	-2.162	-11 2 23.8	+34.39	1 8.9	31	21 11 16.32	+8.923	-16 11 29.4	+11.02	22 27.9
32	21 48 49.07	-3.918	-10 50 43.6	+23.88	1 3.8	32	21 14 56.63	+9.429	-16 6 18.3	+14.90	22 27.9
Day of the Month.						Day of the Month.					
	1st.	6th.	11th.	16th.	21st.		5th.	10th.	15th.	20th.	25th.
Semidiameter ..	2.4	2.5	2.7	2.9	3.2	Semidiameter ..	4.9	5.2	5.0	4.6	4.2
Hor. Parallax ..	6.4	6.6	7.0	7.6	8.5	Hor. Parallax ..	13.0	13.7	13.3	12.2	11.1

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.								
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.			
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.				
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m			
1	21 7 48.69	+ 8.372	-16 15 6.8	+ 7.09	22 28.2	1	23 49 35.98	+15.883	- 3 37 19.3	+108.95	23 10.6			
2	21 11 16.32	8.923	16 11 29.4	11.02	22 27.9	2	23 55 59.22	16.035	2 53 12.6	111.60	23 13.1			
3	21 14 56.63	9.429	16 6 18.3	14.90	22 27.9	3	0 2 26.66	16.233	2 8 2.9	114.19	23 15.7			
4	21 18 48.60	9.895	15 59 34.8	18.72	22 28.0	4	0 8 58.47	16.418	1 21 51.8	116.72	23 18.4			
5	21 22 51.27	10.322	15 51 20.2	22.49	22 28.2	5	0 15 34.78	16.610	- 0 34 40.9	119.17	23 21.1			
6	21 27 3.81	+10.717	-15 41 35.6	+ 26.21	22 28.6	6	0 22 15.79	+16.809	+ 0 13 27.7	+121.53	23 23.9			
7	21 31 25.44	11.080	15 30 22.4	29.88	22 29.1	7	0 29 1.68	17.016	1 2 31.6	123.78	23 26.8			
8	21 35 55.45	11.416	15 17 41.7	33.31	22 29.8	8	0 35 52.62	17.230	1 52 28.3	125.93	23 29.8			
9	21 40 33.21	11.727	15 3 34.5	37.08	22 30.6	9	0 42 48.79	17.452	2 43 15.0	127.94	23 32.9			
10	21 45 18.14	12.014	14 48 2.1	40.62	22 31.5	10	0 49 50.35	17.680	3 34 48.0	129.79	23 36.1			
11	21 50 9.69	+12.279	-14 31 5.3	+ 44.11	22 32.5	11	0 56 57.45	+17.914	+ 4 27 3.5	+131.47	23 39.4			
12	21 55 7.40	12.527	14 12 45.2	47.56	22 33.6	12	1 4 10.25	18.133	5 19 56.8	132.94	23 42.8			
13	22 0 10.86	12.758	13 53 2.8	50.97	22 34.9	13	1 11 28.82	18.395	6 13 22.9	134.19	23 46.2			
14	22 5 19.70	12.975	13 31 59.1	54.33	22 36.2	14	1 18 53.22	18.638	7 7 15.8	135.18	23 49.8			
15	22 10 33.55	13.178	13 9 35.1	57.66	22 37.5	15	1 26 23.45	18.881	8 1 28.9	135.27	23 53.5			
16	22 15 52.15	+13.370	-12 45 51.5	+ 60.96	22 38.9	16	1 33 59.47	+19.119	+ 8 55 54.7	+136.22	23 57.3			
17	22 21 15.22	13.552	12 20 49.3	64.22	22 40.4	17	1 41 41.10	19.349	9 50 24.6	136.20				
18	22 26 42.55	13.725	11 54 29.3	67.44	22 42.0	18	1 49 28.14	19.569	10 44 49.3	135.76	0 1.1			
19	22 32 13.95	13.891	11 26 52.4	70.63	22 43.7	19	1 57 20.26	19.771	11 38 58.8	134.93	0 5.0			
20	22 37 49.25	14.030	10 57 59.4	73.78	22 45.4	20	2 5 16.98	19.952	12 32 42.1	133.59	0 9.0			
21	22 43 28.33	+14.206	-10 27 51.1	+ 76.91	22 47.2	21	2 13 17.75	+20.107	+13 25 47.0	+131.74	0 13.1			
22	22 49 11.09	14.357	9 56 28.2	80.00	22 49.0	22	2 21 21.88	20.232	14 18 1.8	129.40	0 17.3			
23	22 54 57.45	14.506	9 23 51.6	83.05	22 50.9	23	2 29 28.57	20.319	15 9 13.9	126.52	0 21.4			
24	23 0 47.36	14.653	8 50 2.1	86.07	22 52.8	24	2 37 36.86	20.365	15 59 10.4	123.11	0 25.6			
25	23 6 40.79	14.800	8 15 0.4	89.06	22 54.8	25	2 45 45.74	20.567	16 47 39.2	119.20	0 29.9			
26	23 12 37.77	+14.947	- 7 38 47.3	+ 92.02	22 56.9	26	2 53 54.10	+20.521	+17 34 28.1	+124.80	0 34.1			
27	23 18 38.27	15.095	7 1 23.6	94.94	22 59.0	27	3 2 0.76	20.526	18 19 26.1	109.96	0 38.3			
28	23 24 42.35	15.245	6 22 50.3	97.82	23 1.2	28	3 10 4.52	20.078	19 2 23.2	104.74	0 42.4			
29	23 30 50.08	15.399	5 43 8.3	100.67	23 3.5	29	3 18 4.13	19.881	19 43 10.6	99.17	0 46.4			
30	23 37 1.52	15.555	5 2 18.4	103.48	23 5.8	30	3 25 58.41	19.634	20 21 41.3	93.34	0 50.4			
31	23 43 16.78	+15.717	- 4 20 21.6	+106.24	23 8.2	31	3 33 46.18	+19.339	+20 57 49.4	+ 87.30	0 54.3			
32	23 49 35.98	+15.883	- 3 37 19.3	+108.95	23 10.6	32	3 41 26.30	+18.998	+21 31 30.6	+ 81.11	0 58.0			
Day of the Month.						Day of the Month.								
	1st.	6th.	11th.	16th.	21st.	26th.	31st.		5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter .	3.8	3.5	3.3	3.1	2.9	2.8	2.7	Semidiameter .	2.6	2.5	2.5	2.5	2.6	2.8
Hor. Parallax .	10.1	9.3	8.6	8.1	7.7	7.3	7.0	Hor. Parallax .	6.8	6.7	6.6	6.7	7.0	7.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	3 33 46.18	+19.339	+20 57 49.4	+87.30	0 54.3	1	5 34 40.00	-2.291	+22 34 15.4	-43.84	0 52.6
2	3 41 26.30	18.998	21 31 30.6	81.11	0 58.0	2	5 33 36.65	2.979	22 16 28.9	44.95	0 47.6
3	3 48 57.71	18.613	22 2 42.2	74.85	1 1.6	3	5 32 17.48	3.608	21 58 19.6	45.76	0 42.4
4	3 56 19.39	18.188	22 31 23.0	68.55	1 5.0	4	5 30 43.98	4.172	21 39 55.2	46.21	0 36.9
5	4 3 30.42	17.726	22 57 32.7	62.27	1 8.2	5	5 28 57.83	4.661	21 21 24.3	46.31	0 31.2
6	4 10 29.96	+17.230	+23 21 12.5	+56.06	1 11.3	6	5 27 0.90	-3.069	+21 2 55.5	-46.03	0 25.3
7	4 17 17.19	16.702	23 42 24.4	49.95	1 14.1	7	5 24 55.21	3.388	20 44 38.1	45.34	0 19.3
8	4 23 51.38	16.144	24 1 11.1	43.96	1 16.7	8	5 22 42.98	3.615	20 26 42.2	44.24	0 13.2
9	4 30 11.86	15.558	24 17 35.9	38.13	1 19.1	9	5 20 26.48	3.744	20 9 17.8	42.72	0 7.0
10	4 36 17.97	14.947	24 31 42.8	32.47	1 21.3	10	5 18 8.06	3.775	19 52 35.1	40.77	0 0.8
11	4 42 9.14	+14.313	+24 43 36.0	+26.99	1 23.2	11	5 15 50.06	-3.709	+19 36 44.3	-38.40	23 48.4
12	4 47 44.80	13.655	24 53 19.9	21.70	1 24.8	12	5 13 34.81	3.546	19 21 55.1	35.64	23 42.3
13	4 53 4.39	12.975	25 0 59.3	16.62	1 26.2	13	5 11 24.61	3.289	19 8 16.6	32.51	23 36.3
14	4 58 7.42	12.274	25 6 39.1	11.72	1 27.3	14	5 9 21.62	4.946	18 55 57.5	29.04	23 30.5
15	5 2 53.39	11.552	25 10 23.7	7.03	1 28.1	15	5 7 27.83	4.523	18 45 5.0	25.29	23 24.9
16	5 7 21.81	+10.811	+25 12 18.1	+2.34	1 28.6	16	5 5 45.12	-4.025	+18 35 45.4	-21.31	23 19.4
17	5 11 32.21	10.052	25 12 27.2	-1.76	1 28.8	17	5 4 15.17	3.461	18 28 3.7	17.14	23 14.3
18	5 15 24.16	9.273	25 10 55.2	5.87	1 28.7	18	5 2 59.44	2.840	18 22 3.8	12.83	23 9.3
19	5 18 57.20	8.478	25 7 47.2	9.78	1 28.3	19	5 1 59.22	2.170	18 17 48.4	8.45	23 4.6
20	5 22 10.95	7.666	25 3 7.4	13.51	1 27.6	20	5 1 15.60	1.458	18 15 18.3	-4.06	23 0.3
21	5 25 5.03	+6.839	+24 57 0.3	-17.06	1 26.5	21	5 0 49.50	-0.712	+18 14 33.4	+0.30	23 56.2
22	5 27 39.12	5.999	24 49 30.1	20.43	1 25.1	22	5 0 41.65	+0.062	18 15 32.2	4.58	22 52.5
23	5 29 52.91	5.149	24 40 41.2	23.62	1 23.4	23	5 0 52.63	0.857	18 18 12.4	8.74	22 49.0
24	5 31 46.20	4.291	24 30 37.6	26.65	1 21.3	24	5 1 22.90	1.668	18 22 30.6	12.75	22 45.9
25	5 33 18.84	3.428	24 19 23.5	29.49	1 18.9	25	5 2 12.78	2.491	18 28 22.6	16.55	22 43.1
26	5 34 30.76	+2.565	+24 7 3.5	-32.15	1 16.1	26	5 3 22.52	+3.321	+18 35 43.1	+20.12	22 40.6
27	5 35 22.01	1.707	23 53 42.0	34.62	1 13.0	27	5 4 52.25	4.156	18 44 26.4	23.44	22 38.5
28	5 35 52.79	0.860	23 39 23.3	36.91	1 9.6	28	5 6 42.04	4.994	18 54 26.2	26.49	22 36.7
29	5 36 3.40	+0.028	23 24 11.9	39.00	1 5.8	29	5 8 51.95	5.832	19 5 35.5	29.24	22 35.2
30	5 35 54.33	-0.780	23 8 13.1	40.86	1 1.7	30	5 11 21.99	6.670	19 17 47.0	31.67	22 34.1
31	5 35 26.23	-1.556	+22 51 32.4	-42.48	0 57.3	31	5 14 12.09	+7.505	+19 30 52.9	+33.77	22 33.3
32	5 34 40.00	-2.291	+22 34 15.4	-43.84	0 52.6	32	5 17 22.23	+8.339	+19 44 45.0	+35.52	22 32.9
Day of the Month.						Day of the Month.					
5th. 10th. 15th. 20th. 25th. 30th.						4th. 9th. 14th. 19th. 24th. 29th.					
Semidiameter . . . 3.1 3.5 3.9 4.4 5.0 5.5						Semidiameter . . . 5.9 6.1 5.9 5.5 5.0 4.5					
Hor. Parallax . . . 8.2 9.2 10.3 11.7 13.1 14.5						Hor. Parallax . . . 15.6 16.1 15.7 14.7 13.3 11.8					

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	5 14 12.09	+ 7.505	+19 30 52.9	+33.77	22 33.3	1	8 53 51.36	+21.139	+19 16 35.1	- 80.26	0 11.5
2	5 17 22.23	8.339	19 44 45.0	35.52	22 32.9	2	9 2 14.67	20.800	18 43 36.9	84.53	0 16.0
3	5 20 52.36	9.171	19 59 14.8	36.90	22 32.7	3	9 10 29.61	20.442	18 9 0.9	88.42	0 20.3
4	5 24 42.40	9.999	20 14 13.4	37.91	22 32.9	4	9 18 35.80	20.071	17 32 56.0	91.93	0 24.5
5	5 28 52.28	10.824	20 29 31.4	38.53	22 33.5	5	9 26 32.96	19.692	16 55 31.2	95.08	0 28.5
6	5 33 21.91	+11.645	+20 44 59.4	+38.74	22 34.3	6	9 34 20.99	+19.310	+16 16 55.0	- 97.88	0 32.4
7	5 38 11.18	12.460	21 0 27.3	38.52	22 35.5	7	9 41 59.84	18.927	15 37 15.6	100.35	0 36.1
8	5 43 19.06	13.271	21 15 44.7	37.86	22 37.0	8	9 49 29.52	18.547	14 56 40.8	102.51	0 39.6
9	5 48 48.12	14.075	21 30 41.0	36.75	22 38.8	9	9 56 50.12	18.171	14 15 17.4	104.39	0 43.0
10	5 54 35.47	14.869	21 45 5.1	35.17	22 41.0	10	10 4 1.78	17.802	13 33 12.1	106.00	0 46.3
11	6 0 41.75	+15.652	+21 58 45.3	+33.10	22 43.5	11	10 11 4.69	+17.442	+12 50 31.3	-107.36	0 49.4
12	6 7 6.62	16.418	22 11 29.7	30.53	22 46.2	12	10 17 59.06	17.090	12 7 20.8	108.48	0 52.4
13	6 13 49.66	17.165	22 23 6.6	27.46	22 49.3	13	10 24 45.11	16.749	11 23 45.9	109.40	0 55.2
14	6 20 50.35	17.887	22 33 24.0	23.90	22 52.6	14	10 31 23.08	16.417	10 39 51.4	110.11	0 57.8
15	6 28 8.00	18.578	22 42 9.8	19.83	22 56.2	15	10 37 53.22	16.096	9 55 42.0	110.64	1 0.4
16	6 35 41.78	+19.231	+22 49 12.0	+15.27	23 0.1	16	10 44 15.78	+15.785	+ 9 11 21.9	-111.00	1 2.9
17	6 43 30.73	19.841	22 54 19.2	10.24	23 4.2	17	10 50 31.00	15.485	8 26 55.1	111.20	1 5.2
18	6 51 33.72	20.399	22 57 20.5	+ 4.79	23 8.6	18	10 56 39.13	15.194	7 42 25.2	111.26	1 7.4
19	6 59 49.40	20.898	22 58 6.2	- 1.04	23 13.1	19	11 2 40.40	14.913	6 57 55.5	111.18	1 9.4
20	7 8 16.31	21.333	22 56 27.9	7.21	23 17.8	20	11 8 35.03	14.641	6 13 29.4	110.97	1 11.4
21	7 16 52.84	+21.698	+22 52 18.1	-13.64	23 22.6	21	11 14 23.22	+14.377	+ 5 29 9.9	-110.64	1 13.3
22	7 25 37.22	21.988	22 45 31.8	20.25	23 27.5	22	11 20 5.19	14.121	4 44 59.7	110.19	1 15.0
23	7 34 27.65	22.202	22 36 5.2	26.97	23 32.5	23	11 25 41.10	13.872	4 1 1.5	109.64	1 16.7
24	7 43 22.31	22.339	22 23 57.0	33.71	23 37.5	24	11 31 11.11	13.630	3 17 17.9	108.98	1 18.2
25	7 52 19.34	22.400	22 9 7.5	40.40	23 42.5	25	11 36 35.37	13.394	2 33 51.4	108.22	1 19.7
26	8 1 16.96	+22.390	+21 51 39.1	-46.94	23 47.5	26	11 41 54.02	+13.162	+ 1 50 44.4	-107.36	1 21.0
27	8 10 13.50	22.311	21 31 36.0	53.28	23 52.5	27	11 47 7.15	12.933	1 7 59.0	106.41	1 22.3
28	8 19 7.40	22.171	21 9 3.6	59.36	23 57.4	28	11 52 14.85	12.708	+ 0 25 37.6	105.36	1 23.5
29	8 27 57.27	21.976	20 44 9.2	65.12		29	11 57 17.18	12.486	- 0 16 17.3	104.21	1 24.6
30	8 36 41.87	21.734	20 17 0.5	70.54	0 2.2	30	12 2 14.19	12.264	0 57 43.7	102.97	1 25.6
31	8 45 20.20	+21.453	+19 47 46.1	-75.59	0 6.9	31	12 7 5.87	+12.043	- 1 38 39.2	-101.64	1 26.5
32	8 53 51.36	+21.139	+19 16 35.1	-80.26	0 11.5	32	12 11 52.23	+11.820	- 2 19 1.5	-100.21	1 27.3

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.	Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . . .	3.9	3.5	3.1	2.8	2.6	2.5	Semidiameter . . .	2.5	2.5	2.5	2.6	2.7	2.8
Hor. Parallax . . .	10.4	9.2	8.2	7.4	6.9	6.6	Hor. Parallax . . .	6.6	6.6	6.7	6.9	7.2	7.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	12 11 52.23	+11.820	- 2 19 1.5	-100.21	1 27.3	1	13 21 17.72	- 5.528	-12 19 37.9	+ 51.07	0 38.3
2	12 16 33.20	11.594	2 58 48.3	98.67	1 28.1	2	13 18 52.34	6.583	11 56 55.8	62.44	0 31.9
3	12 21 8.73	11.566	3 37 57.0	97.04	1 28.7	3	13 16 2.36	7.566	11 29 42.4	73.62	0 25.2
4	12 25 38.71	11.132	4 16 25.2	95.29	1 29.3	4	13 12 50.14	8.429	10 58 6.3	84.27	0 18.0
5	12 30 2.98	10.890	4 54 10.0	93.42	1 29.7	5	13 9 19.04	9.132	10 22 25.4	93.93	0 10.6
6	12 34 21.36	+10.640	- 5 31 8.7	-91.44	1 30.1	6	13 5 33.44	- 9.632	- 9 43 9.2	+102.15	1 0 2.0
7	12 38 33.62	10.380	6 7 18.3	89.33	1 30.3	7	13 1 38.62	9.892	9 0 57.6	108.45	23 47.3
8	12 42 39.51	10.108	6 42 35.6	87.08	1 30.5	8	12 57 40.73	9.885	8 16 42.2	112.40	23 39.5
9	12 46 38.70	9.822	7 16 57.0	84.68	1 30.5	9	12 53 46.39	9.597	7 31 23.5	113.69	23 31.8
10	12 50 30.83	9.519	7 50 18.8	82.12	1 30.4	10	12 50 2.44	9.020	6 46 7.8	112.12	23 24.5
11	12 54 15.46	+ 9.197	- 8 22 37.0	-79.38	1 30.2	11	12 46 35.60	- 8.173	- 6 2 4.3	+107.69	23 17.5
12	12 57 52.10	8.853	8 53 47.3	76.44	1 29.9	12	12 43 32.09	7.081	5 20 20.1	100.55	23 11.0
13	13 1 20.20	8.422	9 23 44.7	73.30	1 29.4	13	12 40 57.32	5.786	4 41 57.2	90.99	23 5.0
14	13 4 39.13	8.086	9 52 24.1	69.93	1 28.8	14	12 38 55.62	4.333	4 7 48.5	79.44	22 59.6
15	13 7 48.17	7.660	10 19 39.6	66.51	1 28.0	15	12 37 30.18	2.774	3 38 36.0	66.40	22 54.9
16	13 10 46.56	+ 7.129	-10 45 24.9	-62.42	1 27.0	16	12 36 42.90	- 1.160	- 3 14 49.2	+ 52.58	22 50.8
17	13 13 33.42	6.699	11 9 33.1	58.22	1 25.8	17	12 36 34.57	+ 0.464	2 56 45.8	37.87	22 47.4
18	13 16 7.78	6.197	11 31 56.5	53.67	1 24.4	18	12 37 4.90	2.055	2 44 31.8	23.32	22 44.5
19	13 18 28.59	5.570	11 52 26.4	48.76	1 22.8	19	12 38 12.69	3.581	2 38 4.1	+ 9.08	22 42.3
20	13 20 34.72	4.922	12 10 53.6	43.44	1 21.0	20	12 39 56.07	5.017	2 37 10.9	- 4.53	22 40.6
21	13 22 24.91	+ 4.222	-12 27 7.8	-37.67	1 18.9	21	12 42 12.66	+ 6.346	- 2 41 34.5	- 17.29	22 39.4
22	13 23 57.87	3.496	12 40 57.7	31.40	1 16.4	22	12 44 59.76	7.558	2 50 53.0	29.07	22 38.7
23	13 25 12.23	2.691	12 52 10.9	24.61	1 13.7	23	12 48 14.49	8.649	3 4 41.2	39.77	22 38.4
24	13 26 6.55	1.823	13 0 34.5	17.25	1 10.7	24	12 51 53.97	9.620	3 22 32.9	49.35	22 38.4
25	13 26 39.38	+ 0.901	13 5 54.0	9.27	1 7.3	25	12 55 55.34	10.475	3 44 1.2	57.82	22 38.8
26	13 26 49.33	- 0.022	-13 7 54.6	- 0.67	1 3.5	26	13 0 15.91	+11.222	- 4 8 39.8	- 65.22	22 39.5
27	13 26 35.06	1.115	13 6 21.1	+ 8.57	0 59.3	27	13 4 53.20	11.870	4 36 3.5	71.58	22 40.4
28	13 25 55.45	2.192	13 0 58.1	12.44	0 54.7	28	13 9 44.94	12.428	5 5 48.3	77.00	22 41.5
29	13 24 49.60	3.299	12 51 31.3	28.88	0 49.7	29	13 14 49.09	12.906	5 37 32.4	81.54	22 42.8
30	13 23 17.02	4.416	12 37 47.9	39.81	0 44.2	30	13 20 3.85	13.314	6 10 55.6	85.27	22 44.2
31	13 21 17.72	- 5.528	-12 19 37.9	+ 51.07	0 38.3	31	13 25 27.68	+13.662	- 6 45 39.6	- 82.26	22 45.8
32	13 18 52.34	- 6.583	-11 56 55.8	+ 62.44	0 31.9	32	13 30 59.19	+13.957	- 7 21 27.9	- 90.64	22 47.5
Day of the Month.						Day of the Month.					
2d. 7th. 12th. 17th. 22d. 27th.						2d. 7th. 12th. 17th. 22d. 27th.					
Semidiameter . . .						Semidiameter . . .					
Hor. Parallax . . .						Hor. Parallax . . .					
3.0 3.2 3.4 3.7 4.1 4.5						4.9 5.1 4.8 4.2 3.6 3.1					
7.9 8.4 9.0 9.8 10.8 11.9						13.0 13.4 12.7 11.1 9.5 8.3					
NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.											

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	h m s		° ' "		h m		h m s		° ' "		h m
1	13 30 59.19	+13.937	- 7 21 27.9	-90.64	22 47.5	1	16 38 39.06	+16.764	-23 11 25.8	-46.98	23 58.1
2	13 36 37.25	14.208	7 58 5.9	92.43	22 49.3	2	16 45 22.21	16.835	23 29 36.6	43.96	
3	13 42 20.87	14.482	8 35 20.6	93.71	22 51.2	3	16 52 7.12	16.907	23 46 35.6	40.94	0 0.9
4	13 48 9.23	14.604	9 13 0.5	94.34	22 53.1	4	16 58 53.74	16.978	24 2 21.3	37.86	0 3.7
5	13 54 1.65	14.760	9 50 55.4	94.97	22 55.1	5	17 5 42.02	17.046	24 16 52.4	34.78	0 6.6
6	13 59 57.56	+14.895	-10 28 56.3	-95.05	22 57.1	6	17 12 31.92	+17.112	-24 30 7.4	-31.52	0 9.5
7	14 5 56.49	15.013	11 6 55.2	94.82	22 59.2	7	17 19 23.35	17.174	24 42 5.0	28.27	0 12.4
8	14 11 58.07	15.117	11 44 45.2	94.32	23 1.3	8	17 26 16.24	17.232	24 52 43.7	24.95	0 15.3
9	14 18 2.00	15.209	12 22 20.5	93.59	23 3.5	9	17 33 10.47	17.286	25 2 2.2	21.58	0 18.3
10	14 24 8.05	15.293	12 59 35.7	92.63	23 5.7	10	17 40 5.95	17.333	25 9 59.1	18.15	0 21.3
11	14 30 16.01	+15.370	-13 36 25.5	-91.49	23 7.9	11	17 47 2.53	+17.376	-25 16 33.1	-24.67	0 24.3
12	14 36 25.76	15.442	14 12 45.9	90.18	23 10.2	12	17 54 0.07	17.415	25 21 42.9	11.14	0 27.3
13	14 42 37.19	15.511	14 48 33.1	88.73	23 12.4	13	18 0 58.38	17.444	25 25 27.3	7.55	0 30.3
14	14 48 50.25	15.577	15 23 43.8	87.14	23 14.7	14	18 7 57.30	17.464	25 27 45.1	3.92	0 33.4
15	14 55 4.88	15.628	15 58 15.0	85.43	23 17.1	15	18 14 56.60	17.475	25 28 35.2	- 0.24	0 36.5
16	15 1 21.04	+15.706	-16 32 3.7	-83.61	23 19.4	16	18 21 56.02	+17.475	-25 27 56.3	+ 3.48	0 39.5
17	15 7 38.75	15.770	17 5 7.4	81.69	23 21.8	17	18 28 55.32	17.464	25 25 47.6	7.25	0 42.6
18	15 13 57.99	15.834	17 37 24.1	79.68	23 24.2	18	18 35 54.18	17.443	25 22 8.2	11.04	0 45.6
19	15 20 18.77	15.899	18 8 51.5	77.58	23 26.6	19	18 42 52.28	17.400	25 16 57.4	14.86	0 48.6
20	15 26 41.13	15.965	18 39 27.5	75.40	23 29.1	20	18 49 49.23	17.348	25 10 14.7	18.70	0 51.6
21	15 33 5.10	+16.033	-19 9 10.1	-73.14	23 31.6	21	18 56 44.59	+17.288	-25 1 59.5	+22.56	0 54.6
22	15 39 30.71	16.102	19 37 57.9	70.82	23 34.1	22	19 3 37.92	17.172	24 52 11.8	26.41	0 57.6
23	15 45 57.99	16.172	20 5 49.1	68.43	23 36.7	23	19 10 28.67	17.033	24 40 51.7	30.26	1 0.5
24	15 52 26.96	16.243	20 32 41.8	65.96	23 39.2	24	19 17 16.23	16.907	24 27 59.6	34.08	1 3.4
25	15 58 57.65	16.315	20 58 34.5	63.42	23 41.8	25	19 23 59.94	16.791	24 13 36.3	37.85	1 6.2
26	16 5 30.09	+16.388	-21 23 25.4	-60.82	23 44.5	26	19 30 39.04	+16.521	-23 57 43.3	+41.55	1 8.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.													
JANUARY.						FEBRUARY.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	15 39 18.71	+11.699	-16 48 43.5	-42.42	20 57.3	1	18 13 49.67	+12.991	-21 58 54.7	-3.63	21 30.1		
2	15 44 0.20	11.758	17 5 32.0	41.60	20 58.1	2	18 19 1.60	13.005	22 0 3.1	2.07	21 31.4		
3	15 48 43.11	11.817	17 22 0.3	40.74	20 59.0	3	18 24 13.84	13.017	22 0 33.9	-0.50	21 32.7		
4	15 53 27.42	11.875	17 38 7.7	39.86	20 59.8	4	18 29 26.33	13.026	22 0 26.8	+1.08	21 34.0		
5	15 58 13.11	11.932	17 53 53.3	38.94	21 0.7	5	18 34 39.02	13.033	21 59 41.8	2.66	21 35.2		
6	16 3 0.17	+11.989	-18 9 16.4	-37.98	21 1.5	6	18 39 51.85	+13.038	-21 58 18.7	+4.25	21 36.5		
7	16 7 48.58	12.045	18 24 16.1	36.99	21 2.4	7	18 45 4.77	13.040	21 56 17.5	5.84	21 37.8		
8	16 12 38.33	12.101	18 38 51.6	35.96	21 3.3	8	18 50 17.72	13.040	21 53 38.0	7.43	21 39.1		
9	16 17 29.39	12.155	18 53 2.1	34.90	21 4.2	9	18 55 30.64	13.038	21 50 20.4	9.03	21 40.3		
10	16 22 21.73	12.208	19 6 46.8	33.81	21 5.1	10	19 0 43.48	13.034	21 46 24.5	10.62	21 41.6		
11	16 27 15.34	+12.260	-19 20 4.9	-32.69	21 6.0	11	19 5 56.18	+13.027	-21 41 50.6	+12.21	21 42.8		
12	16 32 10.17	12.310	19 32 55.8	31.54	21 7.0	12	19 11 8.69	13.018	21 36 38.6	13.79	21 44.1		
13	16 37 6.20	12.359	19 45 18.8	30.36	21 8.0	13	19 16 20.95	13.006	21 30 48.8	15.37	21 45.4		
14	16 42 3.39	12.407	19 57 13.1	29.16	21 9.1	14	19 21 32.90	12.992	21 24 21.3	16.93	21 46.7		
15	16 47 1.72	12.454	20 8 38.1	27.92	21 10.2	15	19 26 44.49	12.976	21 17 16.2	18.49	21 47.9		
16	16 52 1.14	+12.499	-20 19 33.1	-26.66	21 11.3	16	19 31 55.68	+12.958	-21 9 33.8	+20.04	21 49.1		
17	16 57 1.63	12.543	20 29 57.4	25.37	21 12.4	17	19 37 6.42	12.938	21 1 14.3	21.58	21 50.3		
18	17 2 3.15	12.585	20 39 50.5	24.05	21 13.5	18	19 42 16.66	12.916	20 52 17.9	23.11	21 51.5		
19	17 7 5.66	12.625	20 49 11.8	22.71	21 14.6	19	19 47 26.37	12.893	20 42 44.9	24.63	21 52.7		
20	17 12 9.12	12.664	20 58 0.8	21.35	21 15.7	20	19 52 35.49	12.868	20 32 35.8	26.13	21 53.9		
21	17 17 13.50	+12.701	-21 6 16.9	-19.97	21 16.8	21	19 57 43.99	+12.842	-20 21 50.8	+27.62	21 55.1		
22	17 22 18.75	12.737	21 13 59.7	18.57	21 18.0	22	20 2 51.84	12.814	20 10 30.3	29.09	21 56.3		
23	17 27 24.82	12.771	21 21 8.5	17.15	21 19.1	23	20 7 59.00	12.784	19 58 34.6	30.55	21 57.5		
24	17 32 31.68	12.805	21 27 43.0	15.72	21 20.3	24	20 13 5.44	12.753	19 46 4.0	31.99	21 58.7		
25	17 37 39.29	12.835	21 33 42.7	14.26	21 21.5	25	20 18 11.13	12.722	19 32 59.0	33.42	21 59.8		
26	17 42 47.60	+12.861	-21 39 7.3	-12.78	21 22.7	26	20 23 16.04	+12.689	-19 19 20.0	+34.82	22 1.0		
27	17 47 56.57	12.887	21 43 56.2	11.29	21 23.9	27	20 28 20.16	12.655	19 5 7.5	36.21	22 2.1		
28	17 53 6.16	12.912	21 48 9.2	9.78	21 25.1	28	20 33 23.46	12.620	18 50 21.9	37.58	22 3.2		
29	17 58 16.31	12.935	21 51 45.8	8.26	21 26.3	29	20 38 25.91	12.584	18 35 3.8	38.92	22 4.2		
30	18 3 26.97	12.956	21 54 45.8	6.73	21 27.6	30	20 43 27.49	12.548	18 19 13.6	40.25	22 5.3		
31	18 8 38.11	+12.975	-21 57 8.8	-5.19	21 28.8	31	20 48 28.19	+12.511	-18 2 51.9	+41.55	22 6.3		
32	18 13 49.67	+12.991	-21 58 54.7	-3.65	21 30.1	32	20 53 27.99	+12.473	-17 45 59.1	+42.83	22 7.4		
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter .	9.3	8.9	8.6	8.3	8.0	7.8	7.6	Semidiameter .	7.4	7.2	7.0	6.8	6.6
Hor. Parallax .	9.6	9.2	8.9	8.6	8.3	8.0	7.8	Hor. Parallax .	7.6	7.4	7.2	7.0	6.9

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	20 43 27.49	+12.548	-18 19 13.6	+40.25	22 5.3	1	23 11 44.47	+11.445	-6 38 25.5	+68.34	22 31.0
2	20 48 28.19	12.511	18 2 51.9	41.55	22 6.3	2	23 16 18.89	11.423	6 10 59.6	68.80	22 31.6
3	20 53 27.99	12.473	17 45 59.1	42.83	22 7.4	3	23 20 52.80	11.402	5 43 23.0	69.23	22 32.2
4	20 58 26.89	12.435	17 28 35.8	44.09	22 8.4	4	23 25 26.22	11.383	5 15 36.5	69.64	22 32.8
5	21 3 24.86	12.396	17 10 42.5	45.33	22 9.4	5	23 29 59.21	11.365	4 47 40.7	70.01	22 33.4
6	21 8 21.90	+12.357	-16 52 19.9	+46.54	22 10.4	6	23 34 31.79	+11.348	-4 19 36.3	+70.35	22 34.0
7	21 13 18.00	12.318	16 33 28.5	47.75	22 11.4	7	23 39 3.98	11.333	3 51 24.1	70.66	22 34.6
8	21 18 13.14	12.278	16 14 9.0	48.89	22 12.3	8	23 43 35.83	11.320	3 23 4.8	70.94	22 35.2
9	21 23 7.32	12.239	15 54 22.0	50.02	22 13.3	9	23 48 7.37	11.308	2 54 39.0	71.20	22 35.8
10	21 28 0.54	12.197	15 34 8.1	51.13	22 14.2	10	23 52 38.64	11.297	2 26 7.4	71.42	22 36.4
11	21 32 52.79	+12.157	-15 13 28.0	+52.21	22 15.1	11	23 57 9.67	+11.288	-1 57 30.8	+71.62	22 36.9
12	21 37 44.08	12.117	14 52 22.3	53.26	22 16.0	12	0 1 40.50	11.280	1 28 49.8	71.78	22 37.5
13	21 42 34.41	12.077	14 30 51.8	54.28	22 16.9	13	0 6 11.16	11.274	1 0 5.3	71.92	22 38.1
14	21 47 23.78	12.037	14 8 57.0	55.28	22 17.8	14	0 10 41.68	11.269	0 31 17.8	72.09	22 38.7
15	21 52 12.19	11.997	13 46 38.7	56.24	22 18.7	15	0 15 12.10	11.266	-0 2 28.1	72.11	22 39.2
16	21 56 59.65	+11.958	-13 23 57.6	+57.18	22 19.5	16	0 19 42.47	+11.264	+0 26 23.2	+72.16	22 39.8
17	22 1 46.18	11.919	13 0 54.3	58.09	22 20.3	17	0 24 12.81	11.264	0 55 15.3	72.18	22 40.3
18	22 6 31.79	11.881	12 37 29.5	58.97	22 21.1	18	0 28 43.17	11.265	1 24 7.6	72.18	22 40.9
19	22 11 16.48	11.843	12 13 43.8	59.82	22 21.9	19	0 33 13.57	11.268	1 52 59.4	72.14	22 41.4
20	22 16 0.28	11.806	11 49 38.0	60.65	22 22.7	20	0 37 44.07	11.273	2 21 50.0	72.08	22 42.0
21	22 20 43.20	+11.770	-11 25 12.8	+61.44	22 23.5	21	0 42 14.71	+11.279	+2 50 38.6	+71.98	22 42.6
22	22 25 25.27	11.735	11 0 28.8	62.23	22 24.2	22	0 46 45.52	11.287	3 19 24.6	71.85	22 43.2
23	22 30 6.50	11.701	10 35 26.8	62.95	22 24.9	23	0 51 16.54	11.297	3 48 7.4	71.70	22 43.7
24	22 34 46.93	11.668	10 10 7.3	63.66	22 25.6	24	0 55 47.81	11.308	4 16 46.3	71.52	22 44.3
25	22 39 26.57	11.635	9 44 31.1	64.34	22 26.3	25	1 0 19.37	11.321	4 45 20.6	71.32	22 44.9
26	22 44 5.45	+11.604	-9 18 38.8	+65.00	22 27.0	26	1 4 51.26	+11.336	+5 13 49.7	+71.09	22 45.5
27	22 48 43.60	11.574	8 52 31.1	65.63	22 27.7	27	1 9 23.52	11.352	5 42 12.8	70.83	22 46.1
28	22 53 21.05	11.546	8 26 8.7	66.23	22 28.4	28	1 13 56.20	11.370	6 10 29.2	70.54	22 46.7
29	22 57 57.83	11.519	7 59 32.3	66.80	22 29.1	29	1 18 29.32	11.390	6 38 38.4	70.22	22 47.3
30	23 2 33.97	11.493	7 32 42.5	67.34	22 29.7	30	1 23 2.94	11.411	7 6 39.5	69.87	22 47.9
31	23 7 9.51	+11.468	-7 5 40.0	+67.85	22 30.4	31	1 27 37.09	+11.434	+7 34 31.9	+69.49	22 48.6
32	23 11 44.47	+11.445	-6 38 25.5	+68.34	22 31.0	32	1 32 11.80	+11.458	+8 2 14.9	+69.08	22 49.2

Day of the Month	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter .	6.5	6.3	6.2	6.1	6.0	5.9	5.8	Semidiameter . . .	5.7	5.6	5.5	5.5	5.4	5.3
Hor. Parallax .	6.7	6.6	6.4	6.3	6.2	6.1	6.0	Hor. Parallax . . .	5.9	5.8	5.7	5.6	5.6	5.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.													
MAY.						JUNE.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	1 27 37.09	+11.434	+ 7 34 31.9	+69.49	22 48.6	1	3 56 13.46	+12.658	+19 41 11.6	+42.93	23 15.4		
2	1 32 11.80	11.458	8 2 14.9	69.08	22 49.2	2	4 1 17.79	12.704	19 58 6.3	41.61	23 16.6		
3	1 36 47.10	11.483	8 29 47.8	68.65	22 49.9	3	4 6 23.22	12.750	20 14 28.9	40.26	23 17.8		
4	1 41 23.04	11.510	8 57 9.9	68.18	22 50.5	4	4 11 29.73	12.795	20 30 18.9	38.89	23 19.0		
5	1 45 59.65	11.539	9 24 20.4	67.69	22 51.2	5	4 16 37.31	12.839	20 45 35.5	37.49	23 20.2		
6	1 50 36.97	+11.569	+ 9 51 18.7	+67.17	22 51.9	6	4 21 45.94	+12.882	+21 0 18.2	+36.06	23 21.4		
7	1 55 15.03	11.601	10 18 4.0	66.61	22 52.6	7	4 26 55.60	12.924	21 14 26.2	34.61	23 22.6		
8	1 59 53.83	11.633	10 44 35.6	66.02	22 53.3	8	4 32 6.25	12.965	21 27 59.1	33.13	23 23.9		
9	2 4 33.43	11.666	11 10 52.8	65.40	22 54.1	9	4 37 17.87	13.005	21 40 56.3	31.63	23 25.1		
10	2 9 13.86	11.701	11 36 54.8	64.76	22 54.8	10	4 42 30.43	13.043	21 53 17.2	30.10	23 26.4		
11	2 13 55.13	+11.737	+12 2 40.8	+64.08	22 55.6	11	4 47 43.90	+13.080	+22 5 1.3	+28.56	23 27.7		
12	2 18 37.28	11.774	12 28 10.2	63.37	22 56.3	12	4 52 58.24	13.116	22 16 8.1	26.99	23 29.0		
13	2 23 20.33	11.812	12 53 22.2	62.63	22 57.1	13	4 58 13.41	13.150	22 26 37.0	25.41	23 30.3		
14	2 28 4 30	11.851	13 18 16.0	61.86	22 57.9	14	5 3 29.37	13.182	22 36 27.7	23.81	23 31.7		
15	2 32 49.22	11.891	13 42 51.0	61.06	22 58.7	15	5 8 46.09	13.212	22 45 39.7	22.19	23 33.0		
16	2 37 35.11	+11.932	+14 7 6.5	+60.23	22 59.5	16	5 14 3 51	+13.241	+22 54 12.6	+20.55	23 34.4		
17	2 42 21.98	11.974	14 31 1.7	59.37	23 0.4	17	5 19 21.60	13.268	23 2 5.9	18.89	23 35.7		
18	2 47 9.86	12.016	14 54 35.9	58.47	23 1.3	18	5 24 40.30	13.292	23 9 19.3	17.22	23 37.1		
19	2 51 58.75	12.059	15 17 48.3	57.55	23 2.2	19	5 29 59.57	13.314	23 15 52.5	15.54	23 38.5		
20	2 56 48.69	12.103	15 40 38.3	56.60	23 3.1	20	5 35 19.36	13.334	23 21 45.2	13.84	23 39.9		
21	3 1 39.69	+12.147	+16 3 5.1	+55.62	23 4.0	21	5 40 39.62	+13.353	+23 26 57.0	+12.13	23 41.3		
22	3 6 31.76	12.192	16 25 8.0	54.62	23 4.9	22	5 46 0 30	13.370	23 31 27.7	10.41	23 42.8		
23	3 11 24.91	12.238	16 46 46.4	53.58	23 5.9	23	5 51 21.34	13.385	23 35 17.0	8.68	23 44.2		
24	3 16 19.17	12.284	17 7 59.5	52.51	23 6.9	24	5 56 42.70	13.397	23 38 24.8	6.95	23 45.6		
25	3 21 14.53	12.330	17 28 46.7	51.41	23 7.9	25	6 2 4 32	13.407	23 40 50.9	5.22	23 47.0		
26	3 26 11.01	+12.376	+17 49 7.2	+50.28	23 8.9	26	6 7 26.15	+13.414	+23 42 35.2	+ 3.47	23 48.4		
27	3 31 8.61	12.423	18 9 0.3	49.13	23 10.0	27	6 12 48.14	13.419	23 43 37.4	+ 1.72	23 49.8		
28	3 36 7.33	12.470	18 28 25.4	47.95	23 11.0	28	6 18 10.22	13.422	23 43 57.5	- 0.04	23 51.2		
29	3 41 7.18	12.517	18 47 21.8	46.74	23 12.1	29	6 23 32.34	13.423	23 43 35.4	1.80	23 52.6		
30	3 46 8.15	12.564	19 5 48.7	45.50	23 13.2	30	6 28 54.45	13.421	23 42 31.2	3.56	23 54.1		
31	3 51 10.24	+12.611	+19 23 45.5	+44.23	23 14.3	31	6 34 16.48	+13.417	+23 40 44.7	- 5.32	23 55.5		
32	3 56 13.46	+12.658	+19 41 11.6	+42.93	23 15.4	32	6 39 38.39	+13.410	+23 38 16.0	- 7.08	23 56.9		
Day of the Month.						Day of the Month.							
	5th.	10th.	15th.	20th.	25th.	30th.		4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . . .	5.3	5.2	5.2	5.1	5.1	5.0	Semidiameter . . .	5.0	5.0	5.0	5.0	4.9	4.9
Hor. Parallax . . .	5.5	5.4	5.4	5.3	5.3	5.2	Hor. Parallax . . .	5.2	5.2	5.2	5.1	5.1	5.1

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	6 34 16.48	+13.417	+23 40 44.7	-5.32	23 55.5	1	9 15 32.91	+12.372	+17 18 52.3	-33.29	0 33.2
2	6 39 38.39	13.410	23 38 16.0	7.08	23 56.9	2	9 20 29.26	12.325	16 57 19.1	54.47	0 34.2
3	6 45 0.11	13.401	23 35 5.2	8.83	23 58.3	3	9 25 24.48	12.277	16 35 17.8	55.63	0 35.2
4	6 50 21.60	13.390	23 31 12.4	10.58	23 59.8	4	9 30 18.58	12.230	16 12 49.0	56.76	0 36.1
5	6 55 42.78	13.376	23 26 37.6	12.32		5	9 35 11.54	12.183	15 49 53.6	57.86	0 37.1
6	7 1 3.61	+13.360	+23 21 21.0	-14.06	0 1.2	6	9 40 3.39	+12.137	+15 26 32.1	-58.92	0 38.0
7	7 6 24.02	13.342	23 15 22.8	13.78	0 2.6	7	9 44 54.14	12.091	15 2 45.4	59.96	0 38.9
8	7 11 43.97	13.322	23 8 43.2	17.50	0 4.0	8	9 49 43.79	12.046	14 38 34.1	60.97	0 39.8
9	7 17 3.39	13.299	23 1 22.5	19.21	0 5.4	9	9 54 32.36	12.001	14 13 59.0	61.95	0 40.7
10	7 22 22.25	13.274	22 53 20.9	20.91	0 6.8	10	9 59 19.87	11.957	13 49 0.8	62.89	0 41.5
11	7 27 40.49	+13.247	+22 44 38.8	-22.59	0 8.1	11	10 4 6.33	+11.914	+13 23 40.3	-63.81	0 42.3
12	7 32 58.05	13.218	22 35 16.5	24.26	0 9.5	12	10 8 51.77	11.872	12 57 58.2	64.70	0 43.1
13	7 38 14.88	13.187	22 25 14.3	25.91	0 10.8	13	10 13 36.20	11.830	12 31 55.3	65.55	0 43.9
14	7 43 30.94	13.154	22 14 32.7	27.55	0 12.1	14	10 18 19.64	11.790	12 5 32.2	66.37	0 44.7
15	7 48 46.19	13.119	22 3 11.9	29.16	0 13.4	15	10 23 2.13	11.750	11 38 49.8	67.16	0 45.5
16	7 54 0.60	+13.083	+21 51 12.5	-30.77	0 14.7	16	10 27 43.67	+11.711	+11 11 48.7	-67.92	0 46.2
17	7 59 14.12	13.045	21 38 34.9	32.35	0 16.0	17	10 32 24.30	11.674	10 44 29.7	68.65	0 47.0
18	8 4 26.72	13.006	21 25 19.7	33.91	0 17.3	18	10 37 4.05	11.638	10 16 53.6	69.35	0 47.7
19	8 9 38.36	12.966	21 11 27.2	35.45	0 18.5	19	10 41 42.95	11.603	9 49 0.9	70.02	0 48.4
20	8 14 49.01	12.924	20 56 58.0	36.97	0 19.8	20	10 46 21.03	11.569	9 20 52.6	70.66	0 49.1
21	8 19 58.65	+12.881	+20 41 52.7	-38.46	0 21.0	21	10 50 58.32	+11.539	+8 52 29.3	-71.27	0 49.8
22	8 25 7.25	12.837	20 26 11.8	39.93	0 22.2	22	10 55 34.86	11.507	8 23 51.8	71.85	0 50.5
23	8 30 14.80	12.793	20 9 55.8	41.38	0 23.4	23	11 0 10.69	11.478	7 55 0.7	72.40	0 51.2
24	8 35 21.28	12.748	19 53 5.3	42.81	0 24.6	24	11 4 45.84	11.450	7 25 56.8	72.92	0 51.8
25	8 40 26.66	12.702	19 35 40.9	44.21	0 25.7	25	11 9 20.34	11.424	6 56 40.8	73.41	0 52.4
26	8 45 30.94	+12.655	+19 17 43.1	-45.59	0 26.8	26	11 13 54.25	+11.400	+6 27 13.4	-73.87	0 53.0
27	8 50 34.10	12.608	18 59 12.7	46.94	0 27.9	27	11 18 27.60	11.377	5 57 35.3	74.30	0 53.6
28	8 55 36.13	12.561	18 40 10.2	48.26	0 29.0	28	11 23 0.42	11.355	5 27 47.1	74.71	0 54.2
29	9 0 37.03	12.514	18 20 36.3	49.56	0 30.1	29	11 27 32.76	11.335	4 57 49.7	75.08	0 54.8
30	9 5 36.80	12.466	18 0 31.6	50.83	0 31.2	30	11 32 4.65	11.317	4 27 43.6	75.42	0 55.4
31	9 10 35.42	+12.419	+17 39 56.7	-52.07	0 32.2	31	11 36 36.15	+11.301	+3 57 29.8	-75.73	0 56.0
32	9 15 32.91	+12.372	+17 18 52.3	-53.29	0 33.2	32	11 41 7.29	+11.288	+3 27 8.9	-76.01	0 56.6

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.	Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . . .	4.9	4.9	4.9	4.9	5.0	5.0	Semidiameter . . .	5.0	5.0	5.0	5.1	5.1	5.2
Hor. Parallax . . .	5.1	5.1	5.1	5.1	5.1	5.1	Hor. Parallax . . .	5.2	5.2	5.2	5.2	5.3	5.3

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	11 41 7.29	+11.288	+ 3 27 8.9	-76.01	0 56.6	1	13 57 18.71	+11.665	-11 37 48.5	-70.21	1 14.5
2	11 45 38.11	11.276	2 56 41.6	76.26	0 57.2	2	14 1 59.15	11.703	12 5 45.3	69.53	1 15.2
3	11 50 8.65	11.266	2 26 8.6	76.48	0 57.7	3	14 6 40.52	11.743	12 33 25.5	68.82	1 16.0
4	11 54 38.95	11.257	1 55 30.6	76.67	0 58.3	4	14 11 22.86	11.784	13 0 48.3	68.08	1 16.7
5	11 59 9.07	11.250	1 24 48.5	76.83	0 58.8	5	14 16 6.19	11.826	13 27 53.0	67.31	1 17.5
6	12 3 39.03	+11.245	+ 0 54 2.8	-76.96	0 59.4	6	14 20 50.54	+11.869	-13 54 38.6	-66.30	1 18.3
7	12 8 8.88	11.241	+ 0 23 14.4	77.06	0 59.9	7	14 25 35.93	11.913	14 21 4.5	65.66	1 19.1
8	12 12 38.66	11.239	- 0 7 36.0	77.13	1 0.5	8	14 30 22.40	11.958	14 47 9.8	64.78	1 19.9
9	12 17 8.40	11.239	0 38 27.7	77.17	1 1.0	9	14 35 9.96	12.004	15 12 53.8	63.87	1 20.8
10	12 21 38.16	11.240	1 9 19.9	77.17	1 1.6	10	14 39 58.63	12.051	15 38 15.5	62.95	1 21.7
11	12 26 7.96	+11.243	- 1 40 11.8	-77.15	1 2.1	11	14 44 48.43	+12.098	-16 3 14.3	-61.96	1 22.6
12	12 30 37.86	11.247	2 11 2.8	77.09	1 2.7	12	14 49 39.37	12.146	16 27 49.3	60.95	1 23.5
13	12 35 7.89	11.253	2 41 52.0	77.01	1 3.2	13	14 54 31.47	12.195	16 51 59.7	59.91	1 24.4
14	12 39 38.09	11.261	3 12 38.8	76.89	1 3.8	14	14 59 24.75	12.244	17 15 44.8	58.84	1 25.3
15	12 44 8.50	11.271	3 43 22.4	76.74	1 4.4	15	15 4 19.21	12.293	17 39 3.6	57.74	1 26.3
16	12 48 39.17	+11.282	- 4 14 2.1	-76.56	1 5.0	16	15 9 14.87	+12.343	-18 1 55.6	-56.60	1 27.3
17	12 53 10.14	11.296	4 44 37.1	76.35	1 5.6	17	15 14 11.73	12.393	18 24 19.9	55.43	1 28.3
18	12 57 41.45	11.311	5 15 6.8	76.11	1 6.2	18	15 19 9.79	12.444	18 46 15.7	54.23	1 29.3
19	13 2 13.15	11.328	5 45 30.3	75.84	1 6.7	19	15 24 9.07	12.495	19 7 42.3	52.99	1 30.4
20	13 6 45.27	11.347	6 15 47.0	75.54	1 7.3	20	15 29 9.56	12.546	19 28 39.0	51.73	1 31.4
21	13 11 17.86	+11.368	- 6 45 56.0	-75.23	1 7.9	21	15 34 11.27	+12.597	-19 49 5.0	-50.44	1 32.5
22	13 15 50.97	11.390	7 15 56.7	74.85	1 8.5	22	15 39 14.19	12.647	20 8 59.5	49.13	1 33.6
23	13 20 24.63	11.414	7 45 48.5	74.46	1 9.1	23	15 44 18.32	12.697	20 28 21.9	47.75	1 34.7
24	13 24 58.89	11.440	8 15 30.5	74.04	1 9.7	24	15 49 23.64	12.747	20 47 11.3	46.36	1 35.9
25	13 29 33.78	11.467	8 45 2.1	73.59	1 10.4	25	15 54 30.16	12.797	21 5 27.1	44.94	1 37.1
26	13 34 9.35	+11.496	- 9 14 22.3	-73.12	1 11.0	26	15 59 37.87	+12.846	-21 23 8.6	-43.50	1 38.3
27	13 38 45.63	11.527	9 43 30.6	72.59	1 11.7	27	16 4 46.74	12.895	21 40 15.1	42.03	1 39.5
28	13 43 22.67	11.559	10 12 26.1	72.04	1 12.4	28	16 9 56.76	12.944	21 56 46.0	40.53	1 40.7
29	13 48 0.50	11.593	10 41 8.1	71.46	1 13.1	29	16 15 7.91	12.988	22 12 40.5	39.00	1 42.0
30	13 52 39.17	11.628	11 9 35.8	70.85	1 13.8	30	16 20 20.16	13.033	22 27 58.0	37.45	1 43.3
31	13 57 18.71	+11.665	-11 37 48.5	-70.21	1 14.5	31	16 25 33.47	+13.077	-22 42 37.8	-35.87	1 44.6
32	14 1 59.15	+11.703	-12 5 45.3	-69.53	1 15.2	32	16 30 47.82	+13.120	-22 56 39.4	-34.26	1 45.9

Day of the Month.	3d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	3d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . . .	5.2	5.2	5.3	5.4	5.4	5.5	Semidiameter . . .	5.6	5.6	5.7	5.8	5.9	6.0
Hor. Parallax . . .	5.4	5.4	5.5	5.6	5.6	5.7	Hor. Parallax . . .	5.8	5.8	5.9	6.0	6.1	6.2

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>			<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>	
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>h m</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>h m</i>
1	16 30 47.82	+13.180	-22 56 39.4	-34.26	1 45.9	1	19 11 37.02	+13.283	-24 27 15.3	+20.06	2 28.4
2	16 36 3.19	13.161	23 10 2.1	32.63	1 47.2	2	19 16 55.34	13.246	24 18 52.3	21.85	2 29.7
3	16 41 19.53	13.201	23 22 45.3	30.97	1 48.5	3	19 22 12.76	13.207	24 9 46.6	23.62	2 31.1
4	16 46 36.79	13.239	23 34 48.5	29.29	1 49.8	4	19 27 29.20	13.166	23 59 58.5	25.37	2 32.4
5	16 51 54.93	13.275	23 46 11.2	27.58	1 51.1	5	19 32 44.62	13.122	23 49 28.6	27.10	2 33.7
6	16 57 13.90	+13.309	-23 56 52.7	-25.86	1 52.5	6	19 37 58.95	+13.076	-23 38 17.3	+28.82	2 35.0
7	17 2 33.64	13.340	24 6 52.6	24.12	1 53.9	7	19 43 12.15	13.027	23 26 25.1	30.51	2 36.3
8	17 7 54.11	13.369	24 16 10.5	22.36	1 55.3	8	19 48 24.15	12.976	23 13 52.5	32.18	2 37.6
9	17 13 15.24	13.395	24 24 46.0	20.58	1 56.7	9	19 53 34.92	12.923	23 0 40.1	33.84	2 38.9
10	17 18 36.99	13.419	24 32 38.6	18.78	1 58.2	10	19 58 44.39	12.868	22 46 48.3	35.46	2 40.1
11	17 23 59.28	+13.441	-24 39 48.0	-16.98	1 59.6	11	20 3 52.53	+12.812	-22 32 17.9	+37.06	2 41.3
12	17 29 22.06	13.460	24 46 13.8	15.16	2 1.0	12	20 8 59.30	12.754	22 17 9.4	38.63	2 42.4
13	17 34 45.25	13.476	24 51 55.8	13.32	2 2.4	13	20 14 4.66	12.694	22 1 23.6	40.17	2 43.5
14	17 40 8.79	13.489	24 56 53.6	11.48	2 3.9	14	20 19 8.56	12.632	21 45 1.2	41.68	2 44.6
15	17 45 32.62	13.500	25 1 7.2	9.63	2 5.3	15	20 24 10.98	12.570	21 28 2.8	43.17	2 45.7
16	17 50 56.66	+13.507	-25 4 36.2	-7.77	2 6.8	16	20 29 11.90	+12.507	-21 10 29.1	+44.63	2 46.8
17	17 56 20.85	13.512	25 7 20.5	5.91	2 8.3	17	20 34 11.29	12.443	20 52 20.7	46.06	2 47.9
18	18 1 45.12	13.514	25 9 19.9	4.04	2 9.8	18	20 39 9.12	12.378	20 33 38.4	47.46	2 48.9
19	18 7 9.40	13.513	25 10 34.4	2.17	2 11.3	19	20 44 5.38	12.312	20 14 22.9	48.83	2 49.9
20	18 12 33.63	13.509	25 11 3.9	-0.30	2 12.7	20	20 49 0.06	12.245	19 54 34.8	50.17	2 50.9
21	18 17 57.73	+13.508	-25 10 48.5	+1.58	2 14.2	21	20 53 53.13	+12.176	-19 34 15.0	+51.48	2 51.8
22	18 23 21.63	13.493	25 9 48.0	3.45	2 15.6	22	20 58 44.59	12.111	19 13 24.2	52.75	2 52.7
23	18 28 45.27	13.481	25 8 2.5	5.33	2 17.1	23	21 3 34.42	12.043	18 52 3.2	54.00	2 53.6
24	18 34 8.59	13.466	25 5 32.1	7.20	2 18.5	24	21 8 22.64	11.976	18 30 12.6	55.21	2 54.4
25	18 39 31.51	13.448	25 2 16.9	9.07	2 20.0	25	21 13 9.24	11.908	18 7 53.3	56.39	2 55.2
26	18 44 53.97	+13.427	-24 58 17.1	+10.92	2 21.4	26	21 17 54.21	+11.840	-17 45 6.0	+57.54	2 56.0
27	18 50 15.89	13.404	24 53 32.8	12.77	2 22.8	27	21 22 37.56	11.772	17 21 51.5	58.66	2 56.8
28	18 55 37.22	13.378	24 48 4.2	14.61	2 24.2	28	21 27 19.28	11.704	16 58 10.5	59.75	2 57.6
29	19 0 57.90	13.349	24 41 51.6	16.44	2 25.6	29	21 31 59.38	11.637	16 34 3.9	60.80	2 58.3
30	19 6 17.85	13.317	24 34 55.2	18.26	2 27.0	30	21 36 37.88	11.570	16 9 32.3	61.82	2 59.0
31	19 11 37.02	+13.283	-24 27 15.3	+20.06	2 28.4	31	21 41 14.77	+11.504	-15 44 36.7	+62.81	2 59.7
32	19 16 55.34	+13.246	-24 18 52.3	+21.85	2 29.7	32	21 45 50.07	+11.437	-15 19 17.7	+63.76	3 0.3

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	"	"	"	"	"	"		"	"	"	"	"	"	"
Semidiameter . . .	6.1	6.3	6.4	6.5	6.7	6.8	Semidiameter . . .	7.0	7.2	7.4	7.6	7.8	8.0	8.3
Hor. Parallax . . .	6.4	6.5	6.6	6.8	6.9	7.1	Hor. Parallax . . .	7.2	7.4	7.6	7.8	8.0	8.3	8.6

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	16 52 15.89	+7.705	-22 44 2.9	-14.11	22 8.9	1	18 30 23.65	+8.043	-23 49 9.6	+4.04	21 44.9
2	16 55 21.03	7.723	22 49 35.2	13.58	22 8.0	2	18 33 36.72	8.046	23 47 25.4	4.66	21 44.2
3	16 58 26.60	7.740	22 54 54.6	13.04	22 7.2	3	18 36 49.86	8.048	23 45 26.4	5.28	21 43.5
4	17 1 32.58	7.757	23 0 1.0	12.50	22 6.3	4	18 40 3.06	8.050	23 43 12.7	5.89	21 42.8
5	17 4 38.96	7.774	23 4 54.2	11.95	22 5.5	5	18 43 16.30	8.052	23 40 44.3	6.50	21 42.1
6	17 7 45.75	+7.791	-23 9 34.2	-11.40	22 4.7	6	18 46 29.57	+8.053	-23 38 1.0	+7.11	21 41.4
7	17 10 52.93	7.807	23 14 1.0	10.85	22 3.9	7	18 49 42.85	8.053	23 35 3.0	7.73	21 40.7
8	17 14 0.49	7.822	23 18 14.4	10.29	22 3.1	8	18 52 56.14	8.052	23 31 50.3	8.34	21 40.0
9	17 17 8.41	7.837	23 22 14.2	9.72	22 2.3	9	18 56 9.41	8.051	23 28 22.9	8.95	21 39.2
10	17 20 16.69	7.852	23 26 0.3	9.15	22 1.5	10	18 59 22.65	8.050	23 24 40.8	9.56	21 38.5
11	17 23 25.31	+7.866	-23 29 32.8	-8.57	22 0.7	11	19 2 35.85	+8.049	-23 20 44.1	+10.17	21 37.8
12	17 26 34.26	7.880	23 32 51.5	7.99	21 59.9	12	19 5 48.99	8.047	23 16 32.8	10.78	21 37.0
13	17 29 43.54	7.893	23 35 56.4	7.41	21 59.1	13	19 9 2.06	8.044	23 12 7.0	11.38	21 36.3
14	17 32 53.12	7.905	23 38 47.3	6.83	21 58.3	14	19 12 15.04	8.040	23 7 26.5	11.98	21 35.5
15	17 36 3.00	7.917	23 41 24.1	6.24	21 57.6	15	19 15 27.92	8.035	23 2 31.7	12.58	21 34.8
16	17 39 13.16	+7.929	-23 43 46.8	-5.65	21 56.8	16	19 18 40.69	+8.029	-22 57 22.5	+13.18	21 34.1
17	17 42 23.58	7.940	23 45 55.3	5.06	21 56.1	17	19 21 53.33	8.023	22 51 59.0	13.77	21 33.4
18	17 45 34.26	7.950	23 47 49.6	4.47	21 55.3	18	19 25 5.83	8.017	22 46 21.2	14.36	22 32.6
19	17 48 45.18	7.960	23 49 29.6	3.87	21 54.6	19	19 28 18.19	8.011	22 40 29.2	14.95	21 31.9
20	17 51 56.33	7.969	23 50 55.3	3.27	21 53.8	20	19 31 30.38	8.004	22 34 23.1	15.54	21 31.1
21	17 55 7.69	+7.978	-23 52 6.6	-2.67	21 53.1	21	19 34 42.40	+7.997	-22 28 2.9	+16.13	21 30.4
22	17 58 19.25	7.986	23 53 3.4	2.07	21 52.3	22	19 37 54.25	7.989	22 21 28.8	16.71	21 29.6
23	18 1 31.01	7.993	23 53 45.8	1.47	21 51.6	23	19 41 5.91	7.981	22 14 40.7	17.29	21 28.9
24	18 4 42.95	8.000	23 54 13.6	0.86	21 50.8	24	19 44 17.37	7.973	22 7 38.9	17.86	21 28.1
25	18 7 55.06	8.007	23 54 26.9	-0.25	21 50.1	25	19 47 28.63	7.965	22 0 23.3	18.43	21 27.3
26	18 11 7.33	+8.014	-23 54 25.6	+0.36	21 49.4	26	19 50 39.68	+7.957	-21 52 54.0	+19.00	21 26.6
27	18 14 19.74	8.020	23 54 9.7	0.97	21 48.6	27	19 53 50.51	7.948	21 45 11.1	19.56	21 25.8
28	18 17 32.30	8.026	23 53 39.1	1.58	21 47.9	28	19 57 1.11	7.938	21 37 14.8	20.12	21 25.1
29	18 20 44.97	8.031	23 52 53.8	2.19	21 47.1	29	20 0 11.48	7.928	21 29 5.1	20.68	21 24.3
30	18 23 57.76	8.036	23 51 53.8	2.80	21 46.4	30	20 3 21.62	7.918	21 20 42.0	21.24	21 23.6
31	18 27 10.66	+8.040	-23 50 39.1	+3.42	21 45.7	31	20 6 31.51	+7.907	-21 12 5.7	+21.79	21 22.8
32	18 30 23.65	+8.043	-23 49 9.6	+4.04	21 44.9	32	20 9 41.14	+7.896	-21 3 16.3	+22.33	21 22.0

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter .	2.2	2.2	2.2	2.2	2.3	2.3	2.3	Semidiameter .	2.3	2.4	2.4	2.4	2.4
Hor. Parallax .	3.8	3.8	3.9	3.9	4.0	4.0	4.0	Hor. Parallax .	4.1	4.2	4.2	4.3	4.3

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	20 3 21.62	+7.918	-21 20 42.0	+21.24	21 23.6	1	21 39 0.81	+7.486	-15 22 28.9	+35.55	20 56.8
2	20 6 31.51	7.907	21 12 5.7	21.79	21 22.8	2	21 42 0.30	7.471	15 8 11.3	35.91	20 55.9
3	20 9 41.14	7.896	21 3 16.3	22.33	21 22.0	3	21 44 59.44	7.456	14 53 45.1	36.26	20 54.9
4	20 12 50.52	7.885	20 54 13.9	22.87	21 21.2	4	21 47 58.23	7.441	14 39 10.6	36.60	20 53.9
5	20 15 59.63	7.874	20 44 58.6	23.40	21 20.4	5	21 50 56.66	7.426	14 24 27.9	36.94	20 52.9
6	20 19 8.46	+7.862	-20 35 30.5	+23.93	21 19.6	6	21 53 54.73	+7.412	-14 9 37.3	+37.27	20 51.9
7	20 22 17.01	7.850	20 25 49.8	24.46	21 18.8	7	21 56 52.45	7.397	13 54 38.8	37.59	20 51.0
8	20 25 25.27	7.837	20 15 56.6	24.98	21 18.0	8	21 59 49.81	7.382	13 39 32.7	37.90	20 50.0
9	20 28 33.23	7.824	20 5 51.0	25.49	21 17.2	9	22 2 46.81	7.367	13 24 19.2	38.21	20 49.0
10	20 31 40.87	7.811	19 55 33.2	26.00	21 16.3	10	22 5 43.46	7.352	13 8 58.5	38.51	20 48.0
11	20 34 48.19	+7.798	-19 45 3.3	+26.50	21 15.5	11	22 8 39.75	+7.338	-12 53 30.8	+38.80	20 47.0
12	20 37 55.19	7.785	19 34 21.4	26.99	21 14.7	12	22 11 35.69	7.323	12 37 56.3	39.08	20 45.9
13	20 41 1.87	7.771	19 23 27.7	27.47	21 13.8	13	22 14 31.27	7.308	12 22 15.2	39.35	20 44.9
14	20 44 8.20	7.757	19 12 22.3	27.95	21 13.0	14	22 17 26.50	7.293	12 6 27.6	39.61	20 43.9
15	20 47 14.19	7.743	19 1 5.5	28.43	21 12.1	15	22 20 21.38	7.279	11 50 33.8	39.87	20 42.8
16	20 50 19.83	+7.728	-18 49 37.3	+28.90	21 11.3	16	22 23 15.91	+7.265	-11 34 33.9	+40.12	20 41.8
17	20 53 25.12	7.713	18 37 58.0	29.37	21 10.4	17	22 26 10.09	7.251	11 18 28.2	40.36	20 40.8
18	20 56 30.05	7.698	18 26 7.6	29.83	21 9.5	18	22 29 3.93	7.237	11 2 16.8	40.59	20 39.7
19	20 59 34.62	7.683	18 14 6.4	30.28	21 8.7	19	22 31 57.44	7.223	10 45 59.9	40.82	20 38.7
20	21 2 38.82	7.668	18 1 54.4	30.72	21 7.8	20	22 34 50.62	7.209	10 29 37.6	41.04	20 37.7
21	21 5 42.66	+7.653	-17 49 31.8	+31.16	21 6.9	21	22 37 43.47	+7.196	-10 13 10.2	+41.25	20 36.6
22	21 8 46.13	7.637	17 36 58.8	31.59	21 6.0	22	22 40 36.01	7.183	9 56 37.8	41.45	20 35.6
23	21 11 49.24	7.622	17 24 15.5	32.01	21 5.1	23	22 43 28.24	7.170	9 40 0.5	41.65	20 34.5
24	21 14 51.97	7.606	17 11 22.1	32.43	21 4.2	24	22 46 20.16	7.157	9 23 18.6	41.84	20 33.4
25	21 17 54.34	7.591	16 58 18.8	32.84	21 3.3	25	22 49 11.78	7.145	9 6 32.2	42.02	20 32.3
26	21 20 56.35	+7.576	-16 45 5.6	+33.25	21 2.4	26	22 52 3.10	+7.133	-8 49 41.5	+42.20	20 31.2
27	21 23 58.00	7.561	16 31 42.7	33.65	21 1.5	27	22 54 54.14	7.122	8 32 46.6	42.37	20 30.1
28	21 26 59.28	7.546	16 18 10.3	34.04	21 0.6	28	22 57 44.90	7.111	8 15 47.8	42.53	20 29.0
29	21 30 0.20	7.531	16 4 28.6	34.43	20 59.7	29	23 0 35.38	7.100	7 58 45.2	42.68	20 27.9
30	21 33 0.76	7.516	15 50 37.7	34.81	20 58.7	30	23 3 25.59	7.089	7 41 38.9	42.83	20 26.8
31	21 36 0.97	+7.501	-15 36 37.7	+35.18	20 57.7	31	23 6 15.54	+7.078	-7 24 29.2	+42.97	20 25.7
32	21 39 0.81	+7.486	-15 22 28.9	+35.55	20 56.8	32	23 9 5.24	+7.067	-7 7 16.2	+43.10	20 24.6

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter .	2.5	2.5	2.6	2.6	2.7	2.7	2.8	Semidiameter . . .	2.8	2.8	2.9	2.9	3.0	3.0
Hor. Parallax .	4.4	4.4	4.5	4.6	4.7	4.7	4.8	Hor. Parallax . . .	4.9	5.0	5.0	5.1	5.2	5.3

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	23 6 15.54	+7.078	-7 24 29.2	+42.97	20 25.7	1	0 32 14.73	+6.826	+1 38 34.1	+43.44	19 49.4
2	23 9 5.24	7.067	7 7 16.2	43.10	20 24.6	2	0 34 58.51	6.821	1 55 55.4	43.34	19 48.2
3	23 11 54.68	7.056	6 50 0.1	43.22	20 23.5	3	0 37 42.17	6.816	2 13 14.2	43.23	19 46.9
4	23 14 43.86	7.045	6 32 41.2	43.34	20 22.3	4	0 40 25.73	6.812	2 30 30.4	43.11	19 45.7
5	23 17 32.80	7.034	6 15 19.6	43.45	20 21.2	5	0 43 9.17	6.808	2 47 43.8	42.99	19 44.5
6	23 20 21.49	+7.024	-5 57 55.6	+43.55	20 20.0	6	0 45 52.50	+6.803	+3 4 54.1	+42.86	19 43.3
7	23 23 9.94	7.014	5 40 29.4	43.64	20 18.9	7	0 48 35.72	6.798	3 22 1.1	42.72	19 42.1
8	23 25 58.16	7.004	5 23 1.1	43.72	20 17.7	8	0 51 18.83	6.794	3 39 4.7	42.57	19 40.8
9	23 28 46.14	6.994	5 5 30.9	43.79	20 16.6	9	0 54 1.83	6.789	3 56 4.8	42.42	19 39.6
10	23 31 33.88	6.984	4 47 59.1	43.85	20 15.4	10	0 56 44.73	6.785	4 13 1.1	42.26	19 38.4
11	23 34 21.40	+6.975	-4 30 25.8	+43.91	20 14.3	11	0 59 27.52	+6.780	+4 29 53.4	+42.09	19 37.2
12	23 37 8.68	6.966	4 12 51.3	43.96	20 13.1	12	1 2 10.20	6.776	4 46 41.7	41.91	19 36.0
13	23 39 55.74	6.957	3 55 15.7	44.00	20 12.0	13	1 4 52.77	6.772	5 3 25.7	41.73	19 34.7
14	23 42 42.58	6.948	3 37 39.3	44.03	20 10.8	14	1 7 35.23	6.767	5 20 5.3	41.55	19 33.5
15	23 45 29.21	6.939	3 20 2.2	44.06	20 9.6	15	1 10 17.59	6.763	5 36 40.4	41.36	19 32.2
16	23 48 15.63	+6.930	-3 2 24.5	+44.08	20 8.5	16	1 12 59.85	+6.759	+5 53 10.8	+41.17	19 31.0
17	23 51 1.85	6.922	2 44 46.5	44.09	20 7.3	17	1 15 42.01	6.755	6 9 36.3	40.97	19 29.7
18	23 53 47.85	6.914	2 27 8.3	44.09	20 6.2	18	1 18 24.09	6.751	6 25 56.9	40.76	19 28.5
19	23 56 33.67	6.906	2 9 30.1	44.08	20 5.0	19	1 21 6.07	6.747	6 42 12.4	40.54	19 27.3
20	23 59 19.30	6.898	1 51 52.0	44.07	20 3.8	20	1 23 47.96	6.744	6 58 22.7	40.32	19 26.0
21	0 2 4.75	+6.890	-1 34 14.4	+44.06	20 2.6	21	1 26 29.76	+6.740	+7 14 27.7	+40.09	19 24.8
22	0 4 50.03	6.883	1 16 37.2	44.04	20 1.4	22	1 29 11.49	6.737	7 30 27.2	39.86	19 23.5
23	0 7 35.14	6.876	0 59 0.6	44.01	20 0.2	23	1 31 53.13	6.733	7 46 21.2	39.62	19 22.3
24	0 10 20.10	6.870	0 41 24.8	43.97	19 59.0	24	1 34 34.70	6.730	8 2 9.5	39.38	19 21.0
25	0 13 4.90	6.864	0 23 49.9	43.93	19 57.8	25	1 37 16.19	6.727	8 17 51.9	39.14	19 19.8
26	0 15 49.56	+6.858	-0 6 16.1	+43.88	19 56.6	26	1 39 57.62	+6.724	+8 33 28.3	+38.89	19 18.5
27	0 18 34.08	6.852	+0 11 16.4	43.82	19 55.4	27	1 42 38.97	6.721	8 48 58.7	38.65	19 17.3
28	0 21 18.46	6.846	0 28 47.5	43.76	19 54.2	28	1 45 20.22	6.718	9 4 22.8	38.37	19 16.0
29	0 24 2.71	6.841	0 46 17.0	43.69	19 53.0	29	1 48 1.40	6.715	9 19 40.6	38.10	19 14.8
30	0 26 46.84	6.836	1 3 44.7	43.61	19 51.8	30	1 50 42.51	6.711	9 34 51.9	37.83	19 13.5
31	0 29 30.84	+6.831	+1 21 10.5	+43.53	19 50.6	31	1 53 23.54	+6.708	+9 49 56.5	+37.55	19 12.2
32	0 32 14.73	+6.826	+1 38 34.1	+43.44	19 49.4	32	1 56 4.48	+6.704	+10 4 54.3	+37.26	19 11.0
Day of the Month.						Day of the Month.					
5th. 10th. 15th. 20th. 25th. 30th.						4th. 9th. 14th. 19th. 24th. 29th.					
Semidiameter . . . 3.0 3.1 3.1 3.2 3.3 3.4						Semidiameter . . . 3.4 3.5 3.5 3.6 3.6 3.7					
Hor. Parallax . . . 5.4 5.5 5.6 5.7 5.8 5.9						Hor. Parallax . . . 6.0 6.1 6.2 6.3 6.4 6.5					

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	1 53 23.54	+6.708	+9 49 56.5	+37.35	19 12.2	1	3 15 22.50	+6.469	+16 31 58.1	+26.76	18 32.0
2	1 56 4.48	6.704	10 4 54.3	37.26	19 11.0	2	3 17 57.63	6.455	16 42 35.6	26.37	18 30.6
3	1 58 45.34	6.700	10 19 45.2	36.97	19 9.7	3	3 20 32.42	6.441	16 53 3.6	25.97	18 29.2
4	2 1 26.09	6.696	10 34 29.0	36.67	19 8.4	4	3 23 6.85	6.427	17 3 22.2	25.57	18 27.9
5	2 4 6.74	6.692	10 49 5.5	36.37	19 7.2	5	3 25 40.90	6.412	17 13 31.2	25.17	18 26.5
6	2 6 47.29	+6.687	+11 3 34.7	+36.07	19 5.9	6	3 28 14.56	+6.396	+17 23 30.6	+24.77	18 25.1
7	2 9 27.72	6.682	11 17 56.5	35.76	19 4.7	7	3 30 47.80	6.378	17 33 20.5	24.37	18 23.7
8	2 12 8.02	6.677	11 32 10.6	35.44	19 3.4	8	3 33 20.61	6.359	17 43 0.7	23.97	18 22.3
9	2 14 48.19	6.671	11 46 17.0	35.11	19 2.1	9	3 35 52.98	6.339	17 52 31.3	23.57	18 20.9
10	2 17 28.23	6.665	12 0 15.5	34.77	19 0.8	10	3 38 24.89	6.318	18 1 52.2	23.17	18 19.5
11	2 20 8.12	+6.659	+12 14 6.1	+34.43	18 59.5	11	3 40 56.30	+6.297	+18 11 3.5	+22.77	18 18.1
12	2 22 47.86	6.653	12 27 48.6	34.09	18 58.3	12	3 43 27.22	6.276	18 20 5.3	22.37	18 16.6
13	2 25 27.44	6.646	12 41 23.1	33.75	18 57.0	13	3 45 57.62	6.255	18 28 57.6	21.97	18 15.2
14	2 28 6.86	6.639	12 54 49.4	33.41	18 55.7	14	3 48 27.50	6.234	18 37 40.2	21.58	18 13.7
15	2 30 46.12	6.632	13 8 7.2	33.07	18 54.4	15	3 50 56.83	6.212	18 46 13.4	21.18	18 12.3
16	2 33 25.20	+6.625	+13 21 16.7	+32.72	18 53.1	16	3 53 25.60	+6.189	+18 54 37.2	+20.79	18 10.8
17	2 36 4.11	6.618	13 34 17.8	32.37	18 51.8	17	3 55 53.79	6.165	19 2 51.5	20.40	18 9.3
18	2 38 42.83	6.610	13 47 10.4	32.01	18 50.5	18	3 58 21.38	6.139	19 10 56.4	20.01	18 7.9
19	2 41 21.37	6.602	13 59 54.3	31.65	18 49.2	19	4 0 48.37	6.112	19 18 52.0	19.62	18 6.4
20	2 43 59.71	6.594	14 12 29.7	31.29	18 47.9	20	4 3 14.74	6.084	19 26 38.4	19.24	18 4.9
21	2 46 37.87	+6.586	+14 24 56.3	+30.93	18 46.6	21	4 5 40.47	+6.056	+19 34 15.5	+18.86	18 3.3
22	2 49 15.82	6.577	14 37 14.3	30.56	18 45.3	22	4 8 5.53	6.028	19 41 43.4	18.48	18 1.8
23	2 51 53.58	6.568	14 49 23.4	30.19	18 44.0	23	4 10 29.91	6.000	19 49 2.2	18.10	18 0.2
24	2 54 31.11	6.559	15 1 23.6	29.82	18 42.7	24	4 12 53.58	5.971	19 56 11.9	17.72	17 58.7
25	2 57 8.42	6.550	15 13 14.9	29.45	18 41.3	25	4 15 16.53	5.941	20 3 12.6	17.35	17 57.1
26	2 59 45.50	+6.540	+15 24 57.1	+29.07	18 40.0	26	4 17 38.73	+5.909	+20 10 4.3	+16.98	17 55.5
27	3 2 22.34	6.530	15 36 30.4	28.69	18 38.7	27	4 20 0.16	5.876	20 16 47.1	16.61	17 53.9
28	3 4 58.93	6.519	15 47 54.4	28.31	18 37.4	28	4 22 20.79	5.842	20 23 21.0	16.24	17 52.3
29	3 7 35.25	6.508	15 59 9.3	27.93	18 36.0	29	4 24 40.59	5.807	20 29 46.2	15.87	17 50.7
30	3 10 11.30	6.496	16 10 14.9	27.54	18 34.7	30	4 26 59.53	5.770	20 36 2.6	15.51	17 49.1
31	3 12 47.06	+6.483	+16 21 11.2	+27.15	18 33.3	31	4 29 17.59	+5.732	+20 42 10.5	+15.15	17 47.4
32	3 15 22.50	+6.469	+16 31 58.1	+26.76	18 32.0	32	4 31 34.72	+5.695	+20 48 9.7	+14.80	17 45.8

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.	Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . . .	3.8	3.9	3.9	4.0	4.1	4.2	Semidiameter . . .	4.3	4.4	4.5	4.6	4.7	4.8
Hor. Parallax . . .	6.6	6.8	6.9	7.1	7.2	7.4	Hor. Parallax . . .	7.6	7.8	7.9	8.1	8.3	8.6

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

MARS, 1896.

GREENWICH MEAN TIME.

SEPTEMBER.					OCTOBER.						
Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	
Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.		
h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m	
4 31 34.72	+5.693	+20 48 9.7	+14.80	17 45.8	1	5 30 20.32	+3.875	+22 53 6.7	+7.12	16 45.8	
4 33 50.89	5.653	20 54 0.6	14.45	17 44.1	2	5 31 52.28	3.787	22 55 55.7	6.99	16 43.4	
4 36 6.08	5.612	20 59 43.0	14.10	17 42.4	3	5 33 22.10	3.697	22 58 41.7	6.86	16 40.9	
4 38 20.25	5.570	21 5 17.3	13.76	17 40.7	4	5 34 49.73	3.605	23 1 24.8	6.74	16 38.4	
4 40 33.36	5.526	21 10 43.4	13.42	17 38.9	5	5 36 15.12	3.510	23 4 5.2	6.63	16 35.9	
4 42 45.39	+5.480	+21 16 1.5	+13.09	17 37.2	6	5 37 38.20	+3.413	+23 6 43.3	+6.54	16 33.3	
4 44 56.30	5.432	21 21 11.8	12.77	17 35.4	7	5 38 58.94	3.314	23 9 19.3	6.46	16 30.6	
4 47 6.07	5.383	21 26 14.4	12.45	17 33.6	8	5 40 17.29	3.213	23 11 53.4	6.39	16 28.0	
4 49 14.66	5.333	21 31 9.5	12.14	17 31.8	9	5 41 33.19	3.110	23 14 25.8	6.33	16 25.3	
4 51 22.04	5.282	21 35 57.1	11.84	17 30.0	10	5 42 46.59	3.005	23 16 56.8	6.28	16 22.5	
4 53 28.19	+5.230	+21 40 37.5	+11.54	17 28.1	11	5 43 57.44	+2.898	+23 19 26.6	+6.23	16 19.8	
4 55 33.06	5.176	21 45 10.8	11.23	17 26.2	12	5 45 5.69	2.789	23 21 55.5	6.19	16 17.0	
4 57 36.63	5.121	21 49 37.1	10.96	17 24.3	13	5 46 11.30	2.677	23 24 23.5	6.15	16 14.1	
4 59 38.88	5.065	21 53 56.7	10.68	17 22.4	14	5 47 14.21	2.563	23 26 50.8	6.12	16 11.2	
5 1 39.78	5.008	21 58 9.6	10.41	17 20.5	15	5 48 14.38	2.447	23 29 17.8	6.10	16 8.2	
5 3 39.28	+4.950	+22 2 16.0	+10.15	17 18.5	16	5 49 11.75	+2.329	+23 31 44.7	+6.11	16 5.2	
5 5 37.37	4.890	22 6 16.4	9.89	17 16.5	17	5 50 6.26	2.210	23 34 11.6	6.12	16 2.1	
5 7 34.00	4.829	22 10 10.6	9.64	17 14.5	18	5 50 57.87	2.089	23 36 38.7	6.14	15 59.0	
5 9 29.15	4.767	22 13 59.0	9.40	17 12.5	19	5 51 46.52	1.965	23 39 6.1	6.16	15 55.9	
5 11 22.77	4.703	22 17 41.6	9.17	17 10.4	20	5 52 32.16	1.838	23 41 34.1	6.19	15 52.7	
5 13 14.83	+4.637	+22 21 18.7	+8.94	17 8.3	21	5 53 14.73	+1.709	+23 44 2.7	+6.22	15 49.4	
5 15 5.31	4.569	22 24 50.4	8.72	17 6.2	22	5 53 54.16	1.577	23 46 32.1	6.25	15 46.1	
5 16 54.15	4.500	22 28 17.0	8.50	17 4.1	23	5 54 30.40	1.442	23 49 2.5	6.29	15 42.7	
5 18 41.31	4.429	22 31 38.5	8.29	17 1.9	24	5 55 3.39	1.305	23 51 34.1	6.34	15 39.3	
5 20 26.73	4.356	22 34 55.3	8.09	16 59.7	25	5 55 33.05	1.165	23 54 6.9	6.40	15 35.8	
5 22 10.39	+4.281	+22 38 7.5	+7.90	16 57.5	26	5 55 59.35	+1.023	+23 56 41.0	+6.46	15 32.3	
5 23 52.22	4.204	22 41 15.3	7.73	16 55.2	27	5 56 22.21	0.879	23 59 16.5	6.52	15 28.7	
5 25 32.18	4.125	22 44 18.9	7.57	16 52.9	28	5 56 41.58	0.733	24 1 53.5	6.58	15 25.0	
5 27 10.22	4.044	22 47 18.5	7.41	16 50.6	29	5 56 57.38	0.584	24 4 32.2	6.64	15 21.3	
5 28 46.28	3.961	22 50 14.4	7.26	16 48.2	30	5 57 9.54	0.432	24 7 12.5	6.71	15 17.6	
5 30 20.32	+3.875	+22 53 6.7	+7.12	16 45.8	31	5 57 18.03	+0.278	+24 9 54.4	+6.78	15 13.8	
5 31 52.28	+3.787	+22 55 55.7	+6.99	16 43.4	32	5 57 22.81	+0.121	+24 12 37.9	+6.85	15 9.9	
Day of the Month.						Day of the Month.					
2d 7th. 12th. 17th. 22d. 27th.						2d. 7th. 12th. 17th. 22d. 27th.					
Semidiameter . . . 5.0 5.2 5.4 5.6 5.8 6.0						Semidiameter . . . 6.2 6.4 6.6 6.9 7.2 7.5					
r. Parallax . . . 8.8 9.1 9.4 9.7 10.0 10.4						Hor. Parallax . . . 10.8 11.2 11.6 12.1 12.6 13.1					

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	5 57 22.81	+0.181	+24 12 37.9	+6.85	15 9.9	1	5 31 10.45	-4.087	+25 30 53.8	+3.97	12 44.8
2	5 57 23.83	-0.037	24 15 23.1	6.92	15 5.9	2	5 29 31.47	4.155	25 32 25.5	3.63	12 39.2
3	5 57 21.04	0.195	24 18 9.9	6.98	15 1.9	3	5 27 51.03	4.213	25 33 49.1	3.28	12 33.6
4	5 57 14.43	0.355	24 20 58.2	7.04	14 57.8	4	5 26 9.32	4.261	25 35 4.3	2.93	12 28.0
5	5 57 3.95	0.516	24 23 48.0	7.10	14 53.6	5	5 24 26.56	4.299	25 36 10.9	2.58	12 22.4
6	5 56 49.59	-0.676	+24 26 39.1	+7.15	14 49.4	6	5 22 43.00	-4.327	+25 37 8.9	+4.22	12 16.7
7	5 56 31.33	0.842	24 29 31.4	7.20	14 45.1	7	5 20 58.87	4.345	25 37 58.0	1.86	12 11.0
8	5 56 9.16	1.006	24 32 24.6	7.24	14 40.8	8	5 19 14.42	4.353	25 38 38.3	1.50	12 5.4
9	5 55 43.08	1.169	24 35 18.6	7.27	14 36.4	9	5 17 29.89	4.351	25 39 9.8	1.14	11 59.7
10	5 55 13.12	1.331	24 38 13.2	7.29	14 31.9	10	5 15 45.52	4.340	25 39 32.8	0.79	11 54.0
11	5 54 39.28	-1.492	+24 41 8.0	+7.29	14 27.4	11	5 14 1.54	-4.319	+25 39 47.3	+0.44	11 48.5
12	5 54 1.57	1.651	24 44 2.9	7.28	14 22.8	12	5 12 18.19	4.288	25 39 53.5	+0.09	11 42.8
13	5 53 20.01	1.809	24 46 57.6	7.26	14 18.2	13	5 10 35.71	4.248	25 39 51.4	-0.24	11 37.2
14	5 52 34.65	1.966	24 49 51.6	7.23	14 13.4	14	5 8 54.29	4.199	25 39 41.5	0.55	11 31.6
15	5 51 45.54	2.122	24 52 44.5	7.18	14 8.7	15	5 7 14.16	4.142	25 39 24.1	0.85	11 26.0
16	5 50 52.71	-2.277	+24 55 36.0	+7.11	14 3.8	16	5 5 35.50	-4.077	+25 38 59.6	-1.14	11 20.4
17	5 49 56.19	2.430	24 58 25.7	7.03	13 58.9	17	5 3 58.50	4.005	25 38 28.4	1.45	11 14.9
18	5 48 56.06	2.580	25 1 13.3	6.93	13 53.9	18	5 2 23.34	3.922	25 37 50.8	1.69	11 9.4
19	5 47 52.40	2.726	25 3 58.3	6.81	13 48.9	19	5 0 50.24	3.834	25 37 7.3	1.93	11 3.9
20	5 46 45.28	2.868	25 6 40.2	6.67	13 43.9	20	4 59 19.34	3.740	25 36 18.4	2.15	10 58.5
21	5 45 34.79	-3.006	+25 9 18.6	+6.52	13 38.7	21	4 57 50.80	-3.639	+25 35 24.6	-2.34	10 53.2
22	5 44 21.01	3.140	25 11 53.1	6.35	13 33.5	22	4 56 24.74	3.531	25 34 26.4	2.51	10 47.8
23	5 43 4.05	3.269	25 14 23.3	6.16	13 28.3	23	4 55 1.32	3.418	25 33 24.3	2.66	10 42.5
24	5 41 44.05	3.393	25 16 48.6	5.95	13 23.0	24	4 53 40.66	3.300	25 32 18.9	2.79	10 37.3
25	5 40 21.11	3.512	25 19 8.5	5.72	13 17.7	25	4 52 22.91	3.176	25 31 10.6	2.90	10 32.1
26	5 38 55.38	-3.626	+25 21 22.7	+5.47	13 12.3	26	4 51 8.15	-3.051	+25 30 0.0	-2.98	10 26.9
27	5 37 26.99	3.735	25 23 30.8	5.20	13 6.8	27	4 49 56.49	2.919	25 28 47.7	3.04	10 21.8
28	5 35 56.13	3.835	25 25 32.4	4.91	13 1.3	28	4 48 48.03	2.785	25 27 34.1	3.08	10 16.8
29	5 34 22.98	3.927	25 27 27.0	4.61	12 55.8	29	4 47 42.86	2.644	25 26 19.7	3.10	10 11.8
30	5 32 47.71	4.011	25 29 14.3	4.30	12 50.4	30	4 46 41.06	2.505	25 25 5.1	3.10	10 6.9
31	5 31 10.45	-4.087	+25 30 53.8	+3.97	12 44.8	31	4 45 42.70	-2.359	+25 23 50.9	-3.08	10 2.0
32	5 29 31.47	-4.155	+25 32 25.5	+3.65	12 39.2	32	4 44 47.84	-2.212	+25 22 37.4	-3.04	9 57.2
Day of the Month.						Day of the Month.					
1st. 6th. 11th. 16th. 21st. 26th.						1st. 6th. 11th. 16th. 21st. 26th.					
Semidiameter . . . 7.7 8.0 8.3 8.6 8.8 8.9						Semidiameter . . . 9.0 9.0 8.9 8.8 8.6 8.3 8.0					
Hor. Parallax . . . 13.6 14.1 14.6 15.0 15.3 15.6						Hor. Parallax . . . 15.7 15.8 15.6 15.4 15.0 14.5 14.0					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	8 38 19.97	-1.101	+19 7 29.7	+4.56	13 53.2	1	8 22 9.52	-1.349	+20 9 14.8	+4.77	11 35.2
2	8 37 53.27	1.123	19 9 20.1	4.63	13 48.8	2	8 21 37.23	1.341	20 11 8.7	4.72	11 30.7
3	8 37 26.05	1.144	19 11 11.9	4.69	13 44.4	3	8 21 5.15	1.332	20 13 1.3	4.66	11 26.2
4	8 36 58.35	1.164	19 13 5.2	4.75	13 40.0	4	8 20 33.29	1.322	20 14 52.6	4.61	11 21.8
5	8 36 30.16	1.184	19 14 59.8	4.80	13 35.6	5	8 20 1.67	1.311	20 16 42.5	4.55	11 17.3
6	8 36 1.51	-1.203	+19 16 55.6	+4.85	13 31.2	6	8 19 30.33	-1.300	+20 18 30.9	+4.49	11 12.9
7	8 35 32.42	1.222	19 18 52.6	4.90	13 26.8	7	8 18 59.29	1.287	20 20 17.8	4.42	11 8.5
8	8 35 2.90	1.239	19 20 50.8	4.94	13 22.4	8	8 18 28.58	1.273	20 22 3.1	4.35	11 4.1
9	8 34 32.99	1.254	19 22 49.8	4.98	13 18.0	9	8 17 58.20	1.258	20 23 46.8	4.28	10 59.6
10	8 34 2.71	1.269	19 24 49.7	5.01	13 13.5	10	8 17 28.19	1.242	20 25 28.7	4.21	10 55.2
11	8 33 32.08	-1.283	+19 26 50.5	+5.04	13 9.1	11	8 16 58.56	-1.225	+20 27 8.8	+4.14	10 50.7
12	8 33 1.10	1.296	19 28 52.0	5.07	13 4.6	12	8 16 29.34	1.208	20 28 47.0	4.06	10 46.3
13	8 32 29.82	1.309	19 30 54.0	5.09	13 0.1	13	8 16 0.56	1.190	20 30 23.4	3.98	10 41.9
14	8 31 58.26	1.321	19 32 56.5	5.11	12 55.7	14	8 15 32.23	1.171	20 31 57.8	3.90	10 37.5
15	8 31 26.43	1.331	19 34 59.4	5.13	12 51.3	15	8 15 4.37	1.150	20 33 30.2	3.81	10 33.1
16	8 30 54.37	-1.340	+19 37 2.7	+5.14	12 46.8	16	8 14 37.01	-1.129	+20 35 0.6	+3.72	10 28.7
17	8 30 22.09	1.348	19 39 6.1	5.14	12 42.3	17	8 14 10.17	1.107	20 36 28.9	3.63	10 24.4
18	8 29 49.62	1.355	19 41 9.5	5.14	12 37.8	18	8 13 43.86	1.085	20 37 55.0	3.54	10 20.0
19	8 29 16.99	1.362	19 43 13.0	5.14	12 33.4	19	8 13 18.10	1.062	20 39 18.9	3.45	10 15.7
20	8 28 44.24	1.368	19 45 16.4	5.13	12 28.9	20	8 12 52.90	1.038	20 40 40.5	3.36	10 11.3
21	8 28 11.37	-1.372	+19 47 19.5	+5.12	12 24.4	21	8 12 28.30	-1.013	+20 42 0.1	+3.27	10 7.0
22	8 27 38.40	1.375	19 49 22.3	5.11	12 19.9	22	8 12 4.29	0.987	20 43 17.3	3.18	10 2.7
23	8 27 5.37	1.377	19 51 24.8	5.09	12 15.5	23	8 11 40.90	0.961	20 44 32.1	3.08	9 58.3
24	8 26 32.32	1.378	19 53 26.8	5.07	12 11.0	24	8 11 18.13	0.935	20 45 44.5	2.98	9 54.0
25	8 25 59.26	1.377	19 55 28.2	5.04	12 6.5	25	8 10 56.00	0.908	20 46 54.9	2.88	9 49.7
26	8 25 26.21	-1.376	+19 57 28.9	+5.01	12 2.0	26	8 10 34.52	-0.881	+20 48 2.8	+2.78	9 45.5
27	8 24 53.19	1.374	19 59 28.9	4.98	11 57.5	27	8 10 13.71	0.853	20 49 8.2	2.67	9 41.2
28	8 24 20.24	1.371	20 1 28.1	4.95	11 53.0	28	8 9 53.57	0.824	20 50 11.1	2.57	9 36.9
29	8 23 47.38	1.367	20 3 26.3	4.91	11 48.6	29	8 9 34.13	0.795	20 51 11.9	2.48	9 32.7
30	8 23 14.62	1.362	20 5 23.5	4.87	11 44.1	30	8 9 15.39	0.766	20 52 10.2	2.38	9 28.4
31	8 22 41.99	-1.356	+20 7 19.7	+4.82	11 39.6	31	8 8 57.34	-0.736	+20 53 6.0	+2.28	9 24.2
32	8 22 9.52	-1.349	+20 9 14.8	+4.77	11 35.2	32	8 8 40.01	-0.706	+20 53 59.3	+2.18	9 20.0
Day of the Month.		8d.	11th.	19th.	27th.	Day of the Month.		4th.	12th.	20th.	28th.
Semidiameter		21.6	21.8	21.9	21.9	Semidiameter		21.8	21.6	21.3	20.9
Horizontal Parallax . .		2.0	2.0	2.1	2.1	Horizontal Parallax . .		2.0	2.0	2.0	2.0

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.											
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.						
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.							
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m						
1	8 9 15.39	-0.766	+20 52 10.2	+2.98	9 28.4	1	8 5 56.70	+0.247	+21 1 47.4	-0.81	7 23.4						
2	8 8 57.34	-0.736	20 53 6.0	2.28	9 24.2	2	8 6 3.01	-0.279	21 1 26.8	0.91	7 19.6						
3	8 8 40.01	-0.706	20 53 59.3	2.18	9 20.0	3	8 6 10.09	-0.311	21 1 3.9	1.00	7 15.8						
4	8 8 23.42	-0.676	20 54 50.3	2.07	9 15.8	4	8 6 17.95	-0.343	21 0 38.7	1.10	7 11.9						
5	8 8 7.56	-0.645	20 55 38.8	1.97	9 11.6	5	8 6 26.58	-0.375	21 0 11.0	1.20	7 8.2						
6	8 7 52.44	-0.614	+20 56 24.8	+1.87	9 7.4	6	8 6 35.97	+0.407	+20 59 41.0	-1.30	7 4.4						
7	8 7 38.07	-0.583	20 57 8.3	1.76	9 3.3	7	8 6 46.12	-0.439	20 59 8.8	1.40	7 0.6						
8	8 7 24.47	-0.551	20 57 49.4	1.66	8 59.1	8	8 6 57.03	-0.471	20 58 34.3	1.50	6 56.9						
9	8 7 11.63	-0.519	20 58 28.0	1.55	8 55.0	9	8 7 8.71	-0.502	20 57 57.4	1.59	6 53.2						
10	8 6 59.56	-0.486	20 59 4.1	1.45	8 50.8	10	8 7 21.13	-0.533	20 57 18.1	1.69	6 49.5						
11	8 6 48.28	-0.453	+20 59 37.6	+1.34	8 46.7	11	8 7 34.29	+0.564	+20 56 36.5	-1.79	6 45.7						
12	8 6 37.79	-0.420	21 0 8.6	1.24	8 42.6	12	8 7 48.18	-0.594	20 55 52.6	1.88	6 42.0						
13	8 6 28.09	-0.387	21 0 37.1	1.14	8 38.5	13	8 8 2.81	-0.624	20 55 6.4	1.98	6 38.3						
14	8 6 19.18	-0.354	21 1 3.2	1.03	8 34.5	14	8 8 18.15	-0.654	20 54 17.9	2.07	6 34.7						
15	8 6 11.08	-0.321	21 1 26.8	0.92	8 30.4	15	8 8 34.21	-0.684	20 53 27.2	2.16	6 31.0						
16	8 6 3.79	-0.287	+21 1 47.7	+0.82	8 26.3	16	8 8 50.99	+0.713	+20 52 34.2	-2.26	6 27.3						
17	8 5 57.30	-0.253	21 2 6.2	0.71	8 22.3	17	8 9 8.47	-0.742	20 51 38.9	2.35	6 23.7						
18	8 5 51.62	-0.220	21 2 22.2	0.61	8 18.3	18	8 9 26.64	-0.771	20 50 41.4	2.44	6 20.1						
19	8 5 46.75	-0.186	21 2 35.8	0.51	8 14.3	19	8 9 45.50	-0.800	20 49 41.7	2.54	6 16.5						
20	8 5 42.70	-0.152	21 2 46.8	0.40	8 10.3	20	8 10 5.05	-0.828	20 48 39.7	2.63	6 12.9						
21	8 5 39.45	-0.118	+21 2 55.3	+0.30	8 6.3	21	8 10 25.27	+0.856	+20 47 35.5	-2.72	6 9.3						
22	8 5 37.01	-0.085	21 3 1.3	0.20	8 2.3	22	8 10 46.15	-0.884	20 46 29.1	2.81	6 5.7						
23	8 5 35.38	-0.051	21 3 4.8	+0.09	7 58.4	23	8 11 7.68	-0.911	20 45 20.5	2.90	6 2.1						
24	8 5 34.56	-0.017	21 3 5.8	-0.01	7 54.4	24	8 11 29.87	-0.938	20 44 9.8	2.99	5 58.5						
25	8 5 34.54	+0.016	21 3 4.4	0.11	7 50.5	25	8 11 52.69	-0.964	20 42 56.9	3.08	5 55.0						
26	8 5 35.32	+0.050	+21 3 0.6	-0.21	7 46.6	26	8 12 16.14	+0.990	+20 41 41.9	-3.17	5 51.5						
27	8 5 36.91	-0.083	21 2 54.5	0.31	7 42.7	27	8 12 40.22	-1.016	20 40 24.7	3.26	5 47.9						
28	8 5 39.29	-0.116	21 2 45.9	0.41	7 38.8	28	8 13 4.92	-1.041	20 39 5.4	3.35	5 44.4						
29	8 5 42.46	-0.149	21 2 34.9	0.51	7 34.9	29	8 13 30.23	-1.066	20 37 44.0	3.44	5 40.9						
30	8 5 46.42	-0.182	21 2 21.5	0.61	7 31.1	30	8 13 56.13	-1.091	20 36 20.5	3.53	5 37.4						
31	8 5 51.17	+0.214	+21 2 5.6	-0.71	7 27.2	31	8 14 22.62	+1.116	+20 34 54.8	-3.62	5 33.9						
32	8 5 56.70	+0.247	+21 1 47.4	-0.81	7 23.4	32	8 14 49.70	+1.141	+20 33 27.0	-3.71	5 30.4						
Day of the Month.					7th.	15th.	23d.	31st.	Day of the Month.					8th.	16th.	24th.	32d.
Semidiameter					20.6	20.1	19.6	19.2	Semidiameter					18.7	18.2	17.8	17.4
Horizontal Parallax . . .					1.9	1.9	1.8	1.8	Horizontal Parallax . . .					1.8	1.7	1.7	1.6

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	8 14 22.62	+1.116	+20 34 54.8	-3.62	5 33.9	1	8 32 18.37	+1.723	+19 33 45.9	-6.20	3 49.9
2	8 14 49.70	1.141	20 33 27.0	3.71	5 30.4	2	8 32 59.91	1.738	19 31 16.4	6.27	3 46.6
3	8 15 17.37	1.165	20 31 57.1	3.79	5 26.9	3	8 33 41.81	1.753	19 28 45.0	6.35	3 43.4
4	8 15 45.60	1.189	20 30 25.1	3.88	5 23.5	4	8 34 24.06	1.767	19 26 11.8	6.43	3 40.1
5	8 16 14.40	1.212	20 28 51.0	3.97	5 20.0	5	8 35 6.63	1.781	19 23 36.8	6.50	3 36.9
6	8 16 43.78	+1.235	+20 27 14.8	-4.05	5 16.6	6	8 35 49.53	+1.795	+19 21 0.0	-6.58	3 33.7
7	8 17 13.70	1.258	20 25 36.5	4.14	5 13.1	7	8 36 32.76	1.808	19 18 21.3	6.65	3 30.5
8	8 17 44.16	1.281	20 23 56.2	4.23	5 9.7	8	8 37 16.31	1.821	19 15 40.8	6.72	3 27.3
9	8 18 15.16	1.303	20 22 13.8	4.31	5 6.3	9	8 38 0.17	1.834	19 12 58.5	6.80	3 24.1
10	8 18 46.70	1.325	20 20 29.3	4.40	5 2.9	10	8 38 44.33	1.847	19 10 14.4	6.87	3 20.9
11	8 19 18.77	+1.346	+20 18 42.7	-4.49	4 59.5	11	8 39 28.80	+1.859	+19 7 28.4	-6.94	3 17.7
12	8 19 51.34	1.367	20 16 54.1	4.57	4 56.1	12	8 40 13.55	1.871	19 4 40.7	7.02	3 14.5
13	8 20 24.41	1.388	20 15 3.5	4.66	4 52.7	13	8 40 58.58	1.883	19 1 51.3	7.10	3 11.3
14	8 20 57.98	1.409	20 13 10.8	4.74	4 49.4	14	8 41 43.89	1.894	18 59 0.1	7.17	3 8.1
15	8 21 32.06	1.430	20 11 16.1	4.82	4 46.0	15	8 42 29.47	1.905	18 56 7.3	7.24	3 5.0
16	8 22 6.61	+1.450	+20 9 19.4	-4.91	4 42.7	16	8 43 15.31	+1.916	+18 53 12.7	-7.31	3 1.9
17	8 22 41.63	1.469	20 7 20.6	4.99	4 39.3	17	8 44 1.40	1.926	18 50 16.4	7.38	2 58.7
18	8 23 17.12	1.488	20 5 19.8	5.07	4 36.0	18	8 44 47.74	1.936	18 47 18.4	7.45	2 55.6
19	8 23 53.07	1.507	20 3 17.1	5.16	4 32.6	19	8 45 34.33	1.946	18 44 18.8	7.52	2 52.4
20	8 24 29.46	1.526	20 1 12.4	5.24	4 29.3	20	8 46 21.16	1.956	18 41 17.5	7.59	2 49.3
21	8 25 6.29	+1.544	+19 59 5.7	-5.32	4 26.0	21	8 47 8.21	+1.965	+18 38 14.6	-7.66	2 46.1
22	8 25 43.57	1.562	19 56 57.1	5.40	4 22.7	22	8 47 55.48	1.974	18 35 10.0	7.73	2 42.9
23	8 26 21.27	1.579	19 54 46.5	5.48	4 19.4	23	8 48 42.96	1.983	18 32 3.8	7.79	2 39.8
24	8 26 59.38	1.596	19 52 34.0	5.56	4 16.1	24	8 49 30.66	1.992	18 28 56.1	7.86	2 36.6
25	8 27 37.89	1.613	19 50 19.6	5.64	4 12.8	25	8 50 18.56	2.001	18 25 46.8	7.93	2 33.5
26	8 28 16.81	+1.630	+19 48 3.3	-5.72	4 9.5	26	8 51 6.66	+2.009	+18 22 35.9	-7.99	2 30.3
27	8 28 56.13	1.646	19 45 45.1	5.80	4 6.2	27	8 51 54.97	2.017	18 19 23.4	8.06	2 27.2
28	8 29 35.83	1.666	19 43 25.0	5.89	4 2.9	28	8 52 43.47	2.025	18 16 9.4	8.12	2 24.0
29	8 30 15.91	1.678	19 41 3.0	5.97	3 59.6	29	8 53 32.15	2.032	18 12 53.9	8.18	2 20.9
30	8 30 56.36	1.693	19 38 39.2	6.05	3 56.4	30	8 54 21.01	2.040	18 9 36.8	8.25	2 17.8
31	8 31 37.19	+1.708	+19 36 13.5	-6.13	3 53.1	31	8 55 10.04	+2.047	+18 6 18.2	-8.31	2 14.7
32	8 32 18.37	+1.723	+19 33 45.9	-6.20	3 49.9	32	8 55 59.25	+2.054	+18 2 58.1	-8.37	2 11.6
Day of the Month.						Day of the Month.					
9d. 10th. 18th. 26th.						8d. 11th. 19th. 27th.					
Semidiameter						Semidiameter					
Horizontal Parallax . . .						Horizontal Parallax . . .					
17.4 17.0 16.6 16.3						16.0 15.7 15.5 15.3					
1.6 1.6 1.6 1.5						1.5 1.5 1.5 1.4					

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	8 55 10.04	+2.047	+18 6 18.2	-8.31	2 14.7	1	9 21 28.47	+2.163	+16 12 42.3	-9.89	0 39.1
2	8 55 59.25	2.054	18 2 58.1	8.37	2 11.6	2	9 22 20.39	2.163	16 8 44.5	9.93	0 36.0
3	8 56 48.62	2.061	17 59 36.5	8.43	2 8.5	3	9 23 12.33	2.164	16 4 45.9	9.97	0 32.9
4	8 57 38.15	2.068	17 56 13.4	8.49	2 5.4	4	9 24 4.27	2.164	16 0 46.4	10.00	0 29.8
5	8 58 27.84	2.074	17 52 48.9	8.55	2 2.3	5	9 24 56.21	2.164	15 56 46.1	10.04	0 26.8
6	8 59 17.68	+2.080	+17 49 22.9	-8.61	1 59.2	6	9 25 48.16	+2.164	+15 52 44.9	-10.07	0 23.7
7	9 0 7.66	2.086	17 45 55.5	8.67	1 56.1	7	9 26 40.10	2.164	15 48 42.9	10.10	0 20.7
8	9 0 57.78	2.091	17 42 26.6	8.73	1 53.0	8	9 27 32.03	2.165	15 44 40.2	10.13	0 17.6
9	9 1 48.04	2.097	17 38 56.3	8.79	1 49.9	9	9 28 23.94	2.165	15 40 36.7	10.16	0 14.5
10	9 2 38.43	2.102	17 35 24.6	8.85	1 46.8	10	9 29 15.84	2.164	15 36 32.5	10.19	0 11.4
11	9 3 28.94	+2.107	+17 31 51.6	-8.90	1 43.7	11	9 30 7.71	+2.161	+15 32 27.7	-10.22	0 8.4
12	9 4 19.56	2.112	17 28 17.3	8.96	1 40.6	12	9 30 59.55	2.159	15 28 22.3	10.25	0 5.3
13	9 5 10.30	2.116	17 24 41.7	9.01	1 37.5	13	9 31 51.35	2.157	15 24 16.2	10.27	0 2.1
14	9 6 1.14	2.120	17 21 4.8	9.06	1 34.4	14	9 32 43.11	2.155	15 20 9.4	10.29	23 56.1
15	9 6 52.07	2.124	17 17 26.6	9.12	1 31.3	15	9 33 34.82	2.153	15 16 2.1	10.31	23 53.0
16	9 7 43.11	+2.128	+17 13 47.2	-9.17	1 28.2	16	9 34 26.48	+2.151	+15 11 54.4	-10.33	23 49.9
17	9 8 34.24	2.132	17 10 6.4	9.22	1 25.2	17	9 35 18.09	2.149	15 7 46.2	10.35	23 46.8
18	9 9 25.45	2.135	17 6 24.5	9.27	1 22.1	18	9 36 9.64	2.147	15 3 37.5	10.37	23 43.8
19	9 10 16.73	2.138	17 2 41.4	9.32	1 19.0	19	9 37 1.12	2.145	14 59 28.3	10.39	23 40.7
20	9 11 8.08	2.141	16 58 57.2	9.37	1 15.9	20	9 37 52.53	2.142	14 55 18.7	10.41	23 37.6
21	9 11 59.51	+2.144	+16 55 11.8	-9.42	1 12.8	21	9 38 43.88	+2.139	+14 51 8.6	-10.43	23 34.5
22	9 12 51.00	2.147	16 51 25.3	9.47	1 9.8	22	9 39 35.17	2.135	14 46 58.1	10.44	23 31.4
23	9 13 42.55	2.149	16 47 37.7	9.51	1 6.7	23	9 40 26.37	2.132	14 42 47.3	10.46	23 28.3
24	9 14 34.15	2.151	16 43 49.0	9.56	1 3.6	24	9 41 17.48	2.128	14 38 36.2	10.47	23 25.2
25	9 15 25.80	2.153	16 39 59.2	9.60	1 0.5	25	9 42 8.50	2.124	14 34 24.8	10.48	23 22.1
26	9 16 17.51	+2.155	+16 36 8.4	-9.64	0 57.5	26	9 42 59.44	+2.120	+14 30 13.1	-10.49	23 19.1
27	9 17 9.25	2.157	16 32 16.6	9.69	0 54.4	27	9 43 50.28	2.116	14 26 1.2	10.50	23 16.0
28	9 18 1.04	2.159	16 28 23.7	9.73	0 51.3	28	9 44 41.02	2.112	14 21 49.1	10.51	23 12.9
29	9 18 52.86	2.160	16 24 29.8	9.77	0 48.2	29	9 45 31.66	2.108	14 17 36.8	10.52	23 9.8
30	9 19 44.71	2.161	16 20 34.9	9.81	0 45.2	30	9 46 22.21	2.104	14 13 24.2	10.52	23 6.7
31	9 20 36.58	+2.162	+16 16 39.1	-9.85	0 42.1	31	9 47 12.64	+2.099	+14 9 11.6	-10.53	23 3.6
32	9 21 28.47	+2.163	+16 12 42.3	-9.89	0 39.1	32	9 48 2.95	+2.094	+14 4 58.9	-10.53	23 0.5
Day of the Month.		5th.	18th.	21st.	29th.	Day of the Month.		6th.	14th.	22d.	30th.
Semidiameter		15.2	15.0	14.9	14.9	Semidiameter		14.8	14.8	14.8	14.9
Horizontal Parallax		1.4	1.4	1.4	1.4	Horizontal Parallax		1.4	1.4	1.4	1.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.												
SEPTEMBER.						OCTOBER.						
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.		
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m	
1	9 48 2.95	+2.094	+14 4 58.9	-10.53	23 0.5	1	10 11 54.23	+1.853	+12 0 55.3	-9.92	21 26.2	
2	9 48 53.14	2.089	14 0 46.1	10.53	22 57.4	2	10 12 38.55	1.842	11 56 57.8	9.88	21 23.0	
3	9 49 43.21	2.084	13 56 33.3	10.53	22 54.3	3	10 13 22.60	1.830	11 53 1.4	9.83	21 19.8	
4	9 50 33.15	2.078	13 52 20.5	10.53	22 51.2	4	10 14 6.37	1.818	11 49 6.2	9.78	21 16.6	
5	9 51 22.95	2.072	13 48 7.8	10.53	22 48.1	5	10 14 49.87	1.806	11 45 12.2	9.73	21 13.4	
6	9 52 12.61	+2.066	+13 43 55.2	-10.53	22 45.0	6	10 15 33.07	+1.794	+11 41 19.4	-9.67	21 10.2	
7	9 53 2.13	2.060	13 39 42.6	10.52	22 41.9	7	10 16 15.97	1.782	11 37 28.0	9.62	21 7.0	
8	9 53 51.50	2.054	13 35 30.3	10.51	22 38.8	8	10 16 58.57	1.769	11 33 38.0	9.56	21 3.7	
9	9 54 40.71	2.047	13 31 18.2	10.50	22 35.7	9	10 17 40.87	1.756	11 29 49.3	9.50	21 0.5	
10	9 55 29.76	2.040	13 27 6.3	10.49	22 32.5	10	10 18 22.84	1.743	11 26 2.0	9.44	20 57.2	
11	9 56 18.64	+2.033	+13 22 54.6	-10.48	22 29.4	11	10 19 4.49	+1.730	+11 22 16.2	-9.38	20 54.0	
12	9 57 7.35	2.026	13 18 43.2	10.46	22 26.3	12	10 19 45.82	1.716	11 18 32.1	9.31	20 50.7	
13	9 57 55.88	2.019	13 14 32.3	10.45	22 23.2	13	10 20 26.83	1.702	11 14 49.5	9.24	20 47.4	
14	9 58 44.23	2.011	13 10 21.7	10.44	22 20.0	14	10 21 7.50	1.688	11 11 8.5	9.17	20 44.2	
15	9 59 32.40	2.003	13 6 11.5	10.42	22 16.9	15	10 21 47.82	1.673	11 7 29.2	9.10	20 40.9	
16	10 0 20.38	+1.995	+13 2 1.8	-10.40	22 13.7	16	10 22 27.79	+1.659	+11 3 51.6	-9.03	20 37.6	
17	10 1 8.16	1.987	12 57 52.6	10.38	22 10.6	17	10 23 7.43	1.644	11 0 15.7	8.96	20 34.4	
18	10 1 55.74	1.979	12 53 44.0	10.35	22 7.4	18	10 23 46.70	1.629	10 56 41.5	8.89	20 31.1	
19	10 2 43.13	1.970	12 49 35.9	10.33	22 4.3	19	10 24 25.60	1.614	10 53 9.2	8.81	20 27.8	
20	10 3 30.31	1.961	12 45 28.4	10.30	22 1.1	20	10 25 4.13	1.598	10 49 38.8	8.73	20 24.5	
21	10 4 17.27	+1.952	+12 41 21.6	-10.27	21 58.0	21	10 25 42.30	+1.582	+10 46 10.3	-8.65	20 21.2	
22	10 5 4.01	1.943	12 37 15.4	10.24	21 54.8	22	10 26 20.08	1.566	10 42 43.8	8.57	20 17.9	
23	10 5 50.52	1.934	12 33 9.8	10.21	21 51.7	23	10 26 57.48	1.550	10 39 19.4	8.48	20 14.6	
24	10 6 36.82	1.924	12 29 5.0	10.18	21 48.5	24	10 27 34.49	1.534	10 35 57.0	8.39	20 11.2	
25	10 7 22.89	1.915	12 25 1.0	10.15	21 45.3	25	10 28 11.11	1.517	10 32 36.6	8.30	20 7.9	
26	10 8 8.72	+1.905	+12 20 57.8	-10.12	21 42.1	26	10 28 47.32	+1.500	+10 29 18.4	-8.21	20 4.6	
27	10 8 54.33	1.895	12 16 55.5	10.08	21 39.0	27	10 29 23.12	1.483	10 26 2.4	8.12	20 1.3	
28	10 9 39.68	1.885	12 12 54.0	10.04	21 35.8	28	10 29 58.51	1.466	10 22 48.6	8.03	19 57.9	
29	10 10 24.78	1.875	12 8 53.5	10.00	21 32.6	29	10 30 33.48	1.448	10 19 37.1	7.93	19 54.5	
30	10 11 9.63	1.864	12 4 53.9	9.96	21 29.4	30	10 31 8.02	1.430	10 16 27.9	7.83	19 51.1	
31	10 11 54.23	+1.853	+12 0 55.3	-9.92	21 26.2	31	10 31 42.12	+1.412	+10 13 21.2	-7.73	19 47.8	
32	10 12 38.55	+1.842	+11 56 57.8	-9.88	21 23.0	32	10 32 15.77	+1.393	+10 10 17.0	-7.63	19 44.4	
Day of the Month.					7th.	15th.	23d	Day of the Month.				
					"	"	"					
Semidiameter					14.9	15.1	15.2	Semidiameter				
Horizontal Parallax					1.4	1.4	1.4	Horizontal Parallax				

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	10 32 15.77	+1.393	+10 10 17.0	-7.63	19 44.4	1	10 45 7.03	+0.710	+9 1 15.8	-3.60	17 59.0
2	10 32 48.98	1.374	10 7 15.2	7.52	19 41.0	2	10 45 23.75	0.682	8 59 51.5	3.43	17 55.3
3	10 33 21.73	1.355	10 4 16.0	7.41	19 37.6	3	10 45 39.83	0.655	8 58 31.2	3.27	17 51.7
4	10 33 54.01	1.336	10 1 19.5	7.30	19 34.2	4	10 45 55.26	0.628	8 57 14.9	3.10	17 48.0
5	10 34 25.82	1.316	9 58 25.7	7.19	19 30.8	5	10 46 10.02	0.601	8 56 2.6	2.93	17 44.3
6	10 34 57.16	+1.296	+ 9 55 34.5	-7.08	19 27.4	6	10 46 24.12	+0.573	+8 54 54.4	-2.76	17 40.6
7	10 35 28.02	1.276	9 52 46.1	6.97	19 23.9	7	10 46 37.55	0.545	8 53 50.3	2.59	17 36.9
8	10 35 58.38	1.255	9 50 0.6	6.85	19 20.5	8	10 46 50.31	0.517	8 52 50.3	2.42	17 33.1
9	10 36 28.24	1.234	9 47 18.0	6.73	19 17.1	9	10 47 2.38	0.489	8 51 54.3	2.25	17 29.4
10	10 36 57.59	1.213	9 44 38.2	6.60	19 13.6	10	10 47 13.77	0.461	8 51 2.7	2.07	17 25.6
11	10 37 26.44	+1.191	+ 9 42 1.5	-6.47	19 10.1	11	10 47 24.47	+0.432	+8 50 15.3	-1.89	17 21.9
12	10 37 54.77	1.169	9 39 27.8	6.35	19 6.7	12	10 47 34.49	0.403	8 49 32.0	1.72	17 18.1
13	10 38 22.57	1.147	9 36 57.1	6.22	19 3.2	13	10 47 43.81	0.374	8 48 53.0	1.54	17 14.3
14	10 38 49.85	1.125	9 34 29.4	6.09	18 59.7	14	10 47 52.44	0.345	8 48 18.3	1.36	17 10.5
15	10 39 16.59	1.103	9 32 4.8	5.96	18 56.2	15	10 48 0.36	0.316	8 47 47.8	1.19	17 6.7
16	10 39 42.79	+1.081	+ 9 29 43.5	-5.83	18 52.7	16	10 48 7.59	+0.287	+8 47 21.6	-1.01	17 2.9
17	10 40 8.45	1.058	9 27 25.4	5.69	18 49.2	17	10 48 14.11	0.257	8 46 59.7	0.83	16 59.1
18	10 40 33.57	1.035	9 25 10.6	5.55	18 45.7	18	10 48 19.91	0.228	8 46 42.1	0.65	16 55.2
19	10 40 58.13	1.012	9 22 59.1	5.41	18 42.1	19	10 48 25.00	0.198	8 46 28.9	0.47	16 51.4
20	10 41 22.12	0.988	9 20 51.0	5.27	18 38.6	20	10 48 29.38	0.168	8 46 20.0	0.28	16 47.5
21	10 41 45.54	+0.964	+ 9 18 46.3	-5.13	18 35.1	21	10 48 33.04	+0.138	+8 46 15.5	-0.10	16 43.6
22	10 42 8.39	0.940	9 16 44.9	4.99	18 31.5	22	10 48 35.98	0.108	8 46 15.4	+0.08	16 39.7
23	10 42 30.66	0.916	9 14 47.0	4.84	18 27.9	23	10 48 38.20	0.078	8 46 19.7	0.27	16 35.8
24	10 42 52.34	0.891	9 12 52.7	4.69	18 24.3	24	10 48 39.71	0.048	8 46 28.4	0.45	16 31.9
25	10 43 13.42	0.866	9 11 2.0	4.54	18 20.8	25	10 48 40.48	+0.017	8 46 41.5	0.64	16 28.0
26	10 43 33.90	+0.841	+ 9 9 15.0	-4.38	18 17.1	26	10 48 40.52	-0.014	+8 46 59.0	+0.82	16 24.1
27	10 43 53.77	0.816	9 7 31.7	4.23	18 13.5	27	10 48 39.83	0.044	8 47 20.9	1.01	16 20.1
28	10 44 13.02	0.790	9 5 52.1	4.08	18 9.9	28	10 48 38.41	0.074	8 47 47.3	1.20	16 16.1
29	10 44 31.65	0.764	9 4 16.2	3.92	18 6.3	29	10 48 36.25	0.105	8 48 18.1	1.38	16 12.2
30	10 44 49.66	0.737	9 2 44.0	3.76	18 2.7	30	10 48 33.36	0.135	8 48 53.3	1.57	16 8.2
31	10 45 7.03	+0.710	+ 9 1 15.8	-3.60	17 59.0	31	10 48 29.74	-0.166	+8 49 33.0	+1.75	16 4.2
32	10 45 23.75	+0.682	+ 8 59 51.5	-3.43	17 55.3	32	10 48 25.39	-0.197	+8 50 17.1	+1.93	16 0.2

Day of the Month.	2d.	10th.	18th.	26th.	Day of the Month.	4th.	12th.	20th.	28th.	26th.
Semidiameter	16.5	16.8	17.2	17.6	Semidiameter	18.0	18.5	18.9	19.4	19.8
Horizontal Parallax	1.6	1.6	1.6	1.7	Horizontal Parallax	1.7	1.7	1.8	1.8	1.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.											
JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	14 58 49.75	+0.860	-14 38 51.6	-3.29	20 13.2	1	15 7 1.86	+0.438	-15 7 22.7	-1.26	18 19.3
2	14 59 10.25	0.849	14 40 9.8	3.23	20 9.6	2	15 7 12.17	0.422	15 7 52.1	1.19	18 15.6
3	14 59 30.49	0.838	14 41 26.6	3.17	20 6.0	3	15 7 22.10	0.406	15 8 19.8	1.12	18 11.8
4	14 59 50.46	0.827	14 42 42.0	3.11	20 2.4	4	15 7 31.65	0.390	15 8 45.7	1.05	18 8.0
5	15 0 10.15	0.815	14 43 55.9	3.05	19 58.8	5	15 7 40.81	0.374	15 9 10.1	0.98	18 4.2
6	15 0 29.56	+0.803	-14 45 8.3	-2.99	19 55.2	6	15 7 49.58	+0.358	-15 9 32.8	-0.91	18 0.4
7	15 0 48.69	0.791	14 46 19.2	2.93	19 51.6	7	15 7 57.95	0.341	15 9 53.8	0.84	17 56.7
8	15 1 7.53	0.779	14 47 28.6	2.87	19 48.0	8	15 8 5.93	0.324	15 10 13.1	0.77	17 52.9
9	15 1 26.07	0.767	14 48 36.5	2.81	19 44.4	9	15 8 13.50	0.307	15 10 30.7	0.70	17 49.0
10	15 1 44.31	0.754	14 49 43.0	2.74	19 40.7	10	15 8 20.57	0.291	15 10 46.6	0.63	17 45.2
11	15 2 2.25	+0.741	-14 50 48.0	-2.68	19 37.1	11	15 8 27.45	+0.274	-15 11 0.8	-0.56	17 41.4
12	15 2 19.89	0.728	14 51 51.4	2.62	19 33.4	12	15 8 33.83	0.257	15 11 13.2	0.48	17 37.5
13	15 2 37.21	0.715	14 52 53.2	2.55	19 29.8	13	15 8 39.79	0.240	15 11 24.0	0.41	17 33.7
14	15 2 54.21	0.702	14 53 53.5	2.48	19 26.1	14	15 8 45.34	0.223	15 11 33.1	0.34	17 29.9
15	15 3 10.90	0.688	14 54 52.2	2.41	19 22.5	15	15 8 50.48	0.206	15 11 40.5	0.27	17 26.0
16	15 3 27.26	+0.675	-14 55 49.2	-2.35	19 18.8	16	15 8 55.22	+0.189	-15 11 46.2	-0.20	17 22.2
17	15 3 43.29	0.661	14 56 44.6	2.28	19 15.1	17	15 8 59.54	0.172	15 11 50.2	0.13	17 18.3
18	15 3 58.98	0.647	14 57 38.6	2.22	19 11.4	18	15 9 3.45	0.155	15 11 52.6	-0.06	17 14.4
19	15 4 14.34	0.633	14 58 30.9	2.15	19 7.8	19	15 9 6.95	0.137	15 11 53.3	0.00	17 10.6
20	15 4 29.36	0.619	14 59 21.6	2.08	19 4.1	20	15 9 10.03	0.120	15 11 52.3	+0.07	17 6.7
21	15 4 44.03	+0.605	-15 0 10.7	-2.02	19 0.4	21	15 9 12.70	+0.102	-15 11 49.6	+0.14	17 2.8
22	15 4 58.35	0.590	15 0 58.1	1.95	18 56.7	22	15 9 14.96	0.085	15 11 45.3	0.21	16 58.9
23	15 5 12.33	0.575	15 1 43.9	1.88	18 53.0	23	15 9 16.81	0.068	15 11 39.4	0.28	16 55.0
24	15 5 25.95	0.560	15 2 28.1	1.81	18 49.3	24	15 9 18.24	0.051	15 11 31.9	0.35	16 51.0
25	15 5 39.21	0.545	15 3 10.7	1.74	18 45.6	25	15 9 19.27	0.034	15 11 22.7	0.42	16 47.1
26	15 5 52.12	+0.530	-15 3 51.6	-1.68	18 41.8	26	15 9 19.88	+0.017	-15 11 11.9	+0.49	16 43.2
27	15 6 4.67	0.515	15 4 30.9	1.61	18 38.1	27	15 9 20.08	0.000	15 10 59.4	0.56	16 39.3
28	15 6 16.85	0.500	15 5 8.5	1.54	18 34.4	28	15 9 19.87	-0.017	15 10 45.3	0.63	16 35.3
29	15 6 28.66	0.485	15 5 44.5	1.47	18 30.7	29	15 9 19.25	0.034	15 10 29.6	0.69	16 31.4
30	15 6 40.10	0.469	15 6 18.9	1.40	18 26.9	30	15 9 18.22	0.051	15 10 12.3	0.76	16 27.4
31	15 6 51.17	+0.454	-15 6 51.6	-1.33	18 23.1	31	15 9 16.79	-0.068	-15 9 53.5	+0.82	16 23.5
32	15 7 1.86	+0.438	-15 7 22.7	-1.26	18 19.3	32	15 9 14.95	-0.085	-15 9 33.1	+0.89	16 19.5
Day of the Month.		8d.	11th.	19th.	27th.	Day of the Month.		4th.	12th.	20th.	28th.
Semidiameter		7.5	7.6	7.7	7.8	Semidiameter		7.9	8.0	8.1	8.2
Horizontal Parallax		0.9	0.9	0.9	0.9	Horizontal Parallax		0.9	0.9	0.9	0.9
NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.											

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	15 9 18.22	-0.051	-15 10 12.3	+0.76	16 27.4	1	15 5 35.21	-0.521	-14 49 11.3	+2.51	14 21.7
2	15 9 16.79	0.068	15 9 53.5	0.82	16 23.5	2	15 5 22.53	0.533	14 48 10.5	2.56	14 17.6
3	15 9 14.95	0.085	15 9 33.1	0.89	16 19.5	3	15 5 9.57	0.545	14 47 8.7	2.60	14 13.4
4	15 9 12.70	0.102	15 9 11.1	0.96	16 15.5	4	15 4 56.33	0.557	14 46 5.9	2.64	14 9.3
5	15 9 10.05	0.119	15 8 47.5	1.02	16 11.5	5	15 4 42.82	0.568	14 45 2.1	2.68	14 5.1
6	15 9 6.99	-0.136	-15 8 22.3	+1.09	16 7.6	6	15 4 29.04	-0.579	-14 43 57.5	+2.72	14 1.0
7	15 9 3.53	0.153	15 7 55.6	1.15	16 3.6	7	15 4 15.00	0.590	14 42 52.0	2.75	13 56.8
8	15 8 59.67	0.170	15 7 27.4	1.22	15 59.6	8	15 4 0.70	0.601	14 41 45.6	2.79	13 52.6
9	15 8 55.41	0.186	15 6 57.6	1.28	15 55.6	9	15 3 46.16	0.611	14 40 38.3	2.82	13 48.4
10	15 8 50.75	0.202	15 6 26.3	1.34	15 51.6	10	15 3 31.38	0.621	14 39 30.3	2.85	13 44.3
11	15 8 45.70	-0.219	-15 5 53.5	+1.40	15 47.5	11	15 3 16.38	-0.630	-14 38 21.5	+2.88	13 40.1
12	15 8 40.26	0.235	15 5 19.2	1.46	15 43.5	12	15 3 1.16	0.639	14 37 12.0	2.91	13 35.9
13	15 8 34.43	0.251	15 4 43.4	1.52	15 39.5	13	15 2 45.72	0.648	14 36 1.8	2.94	13 31.7
14	15 8 28.21	0.267	15 4 6.2	1.58	15 35.4	14	15 2 30.08	0.656	14 34 51.0	2.97	13 27.5
15	15 8 21.60	0.283	15 3 27.5	1.64	15 31.4	15	15 2 14.25	0.664	14 33 39.6	2.99	13 23.3
16	15 8 14.62	-0.299	-15 2 47.4	+1.70	15 27.4	16	15 1 58.23	-0.671	-14 32 27.5	+3.01	13 19.1
17	15 8 7.26	0.315	15 2 5.9	1.76	15 23.3	17	15 1 42.03	0.678	14 31 14.9	3.03	13 14.9
18	15 7 59.53	0.330	15 1 23.1	1.82	15 19.2	18	15 1 25.66	0.685	14 30 1.9	3.05	13 10.7
19	15 7 51.43	0.345	15 0 38.9	1.87	15 15.1	19	15 1 9.13	0.692	14 28 48.4	3.07	13 6.5
20	15 7 42.97	0.360	14 59 53.3	1.93	15 11.1	20	15 0 52.45	0.698	14 27 34.4	3.09	13 2.3
21	15 7 34.16	-0.375	-14 59 6.5	+1.99	15 7.0	21	15 0 35.63	-0.703	-14 26 20.1	+3.11	12 58.1
22	15 7 25.00	0.389	14 58 18.4	2.04	15 2.9	22	15 0 18.67	0.708	14 25 5.4	3.12	12 53.9
23	15 7 15.49	0.403	14 57 29.0	2.09	14 58.8	23	15 0 1.59	0.713	14 23 50.4	3.13	12 49.6
24	15 7 5.64	0.417	14 56 38.3	2.14	14 54.7	24	14 59 44.41	0.718	14 22 35.1	3.14	12 45.4
25	15 6 55.46	0.431	14 55 46.4	2.19	14 50.6	25	14 59 27.13	0.722	14 21 19.6	3.15	12 41.2
26	15 6 44.95	-0.445	-14 54 53.4	+2.24	14 46.5	26	14 59 9.74	-0.726	-14 20 3.9	+3.16	12 37.0
27	15 6 34.10	0.458	14 53 59.2	2.29	14 42.4	27	14 58 52.25	0.730	14 18 48.0	3.17	12 32.8
28	15 6 22.94	0.471	14 53 3.8	2.33	14 38.2	28	14 58 34.68	0.733	14 17 31.9	3.18	12 28.5
29	15 6 11.47	0.484	14 52 7.3	2.38	14 34.1	29	14 58 17.04	0.736	14 16 15.7	3.18	12 24.3
30	15 5 59.69	0.497	14 51 9.7	2.42	14 30.0	30	14 57 59.34	0.738	14 14 59.5	3.18	12 20.1
31	15 5 47.60	-0.509	-14 50 11.0	+2.47	14 25.9	31	14 57 41.59	-0.740	-14 13 43.3	+3.18	12 15.9
32	15 5 35.21	-0.521	-14 49 11.3	+2.51	14 21.7	32	14 57 23.79	-0.742	-14 12 27.2	+3.18	12 11.7

Day of the Month.	7th.	15th.	22d.	29th.	Day of the Month.	7th.	15th.	22d.	29th.
Semidiameter	8.4	8.5	8.6	8.6	Semidiameter	8.7	8.7	8.8	
Horizontal Parallax	0.9	1.0	1.0	1.0	Horizontal Parallax	1.0	1.0	1.0	

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	" ' "	"	h m		h m s	s	" ' "	"	h m
1	14 57 41.59	-0.740	-14 13 43.3	+3.18	12 15.9	1	14 48 54.61	-0.617	-13 37 49.7	+2.36	10 5.3
2	14 57 23.79	0.742	14 12 27.2	3.18	12 11.7	2	14 48 39.88	0.608	13 36 53.6	2.31	10 1.1
3	14 57 5.95	0.743	14 11 11.1	3.17	12 7.4	3	14 48 25.39	0.599	13 35 58.8	2.26	9 56.9
4	14 56 48.09	0.744	14 9 55.1	3.17	12 3.2	4	14 48 11.12	0.589	13 35 5.2	2.21	9 52.8
5	14 56 30.22	0.744	14 8 39.2	3.16	11 59.0	5	14 47 57.09	0.579	13 34 12.8	2.15	9 48.6
6	14 56 12.35	-0.744	-14 7 23.4	+3.15	11 54.8	6	14 47 43.31	-0.569	-13 33 21.7	+2.10	9 44.4
7	14 55 54.48	0.745	14 6 7.9	3.14	11 50.6	7	14 47 29.79	0.558	13 32 31.9	2.04	9 40.3
8	14 55 36.62	0.745	14 4 52.7	3.13	11 46.3	8	14 47 16.53	0.547	13 31 43.5	1.99	9 36.1
9	14 55 18.76	0.744	14 3 37.8	3.12	11 42.1	9	14 47 3.53	0.536	13 30 56.5	1.93	9 32.0
10	14 55 0.93	0.742	14 2 23.1	3.10	11 37.9	10	14 46 50.80	0.524	13 30 10.9	1.87	9 27.9
11	14 54 43.14	-0.740	-14 1 8.9	+3.08	11 33.6	11	14 46 38.35	-0.512	-13 29 26.7	+1.81	9 23.7
12	14 54 25.40	0.738	13 59 55.1	3.06	11 29.4	12	14 46 26.19	0.500	13 28 44.0	1.75	9 19.6
13	14 54 7.72	0.735	13 58 41.8	3.04	11 25.2	13	14 46 14.32	0.488	13 28 2.8	1.69	9 15.5
14	14 53 50.11	0.732	13 57 29.0	3.02	11 21.0	14	14 46 2.75	0.476	13 27 23.1	1.63	9 11.3
15	14 53 32.58	0.728	13 56 16.8	2.99	11 16.7	15	14 45 51.48	0.463	13 26 44.9	1.57	9 7.2
16	14 53 15.13	-0.724	-13 55 5.2	+2.96	11 12.5	16	14 45 40.51	-0.450	-13 26 8.3	+1.50	9 3.1
17	14 52 57.77	0.720	13 53 54.2	2.93	11 8.3	17	14 45 29.86	0.437	13 25 33.3	1.43	8 59.0
18	14 52 40.53	0.716	13 52 43.9	2.90	11 4.1	18	14 45 19.53	0.424	13 24 59.9	1.36	8 54.9
19	14 52 23.40	0.711	13 51 34.3	2.87	10 59.9	19	14 45 9.53	0.411	13 24 28.0	1.30	8 50.8
20	14 52 6.39	0.706	13 50 25.5	2.84	10 55.6	20	14 44 59.85	0.397	13 23 57.8	1.23	8 46.7
21	14 51 49.50	-0.700	-13 49 17.4	+2.81	10 51.4	21	14 44 50.50	-0.383	-13 23 29.2	+1.16	8 42.6
22	14 51 32.75	0.694	13 48 10.1	2.78	10 47.2	22	14 44 41.47	0.369	13 23 2.3	1.09	8 38.6
23	14 51 16.16	0.688	13 47 3.7	2.75	10 43.0	23	14 44 32.77	0.355	13 22 37.0	1.02	8 34.5
24	14 50 59.72	0.682	13 45 58.2	2.71	10 38.8	24	14 44 24.42	0.341	13 22 13.4	0.95	8 30.4
25	14 50 43.44	0.675	13 44 53.6	2.67	10 34.6	25	14 44 16.41	0.327	13 21 51.5	0.88	8 26.3
26	14 50 27.32	-0.668	-13 43 50.0	+2.63	10 30.4	26	14 44 8.74	-0.313	-13 21 31.3	+0.81	8 22.3
27	14 50 11.38	0.660	13 42 47.3	2.59	10 26.2	27	14 44 1.40	0.298	13 21 12.7	0.74	8 18.2
28	14 49 55.64	0.652	13 41 45.7	2.55	10 22.0	28	14 43 54.42	0.283	13 20 55.9	0.66	8 14.2
29	14 49 40.08	0.644	13 40 45.1	2.50	10 17.8	29	14 43 47.80	0.268	13 20 40.8	0.59	8 10.1
30	14 49 24.72	0.635	13 39 45.5	2.46	10 13.6	30	14 43 41.54	0.253	13 20 27.4	0.52	8 6.1
31	14 49 9.56	-0.626	-13 38 47.0	+2.41	10 9.5	31	14 43 35.64	-0.238	-13 20 15.8	+0.45	8 2.1
32	14 48 54.61	-0.617	-13 37 49.7	+2.36	10 5.3	32	14 43 30.09	-0.223	-13 20 6.0	+0.38	7 58.1
Day of the Month.	8d.	10th.	18th.	26th.		Day of the Month.	8d.	11th.	19th.	27th.	
Semidiameter	" 8.8	" 8.8	" 8.8	" 8.7		Semidiameter	" 8.7	" 8.6	" 8.5	" 8.4	
Horizontal Parallax . . .	1.0	1.0	1.0	1.0		Horizontal Parallax . . .	1.0	1.0	1.0	1.0	

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	14 43 35.64	-0.238	-13 20 15.8	+0.45	8 2.1	1	14 43 39.07	+0.250	-13 29 3.3	-1.84	6 0.3
2	14 43 30.09	0.223	13 20 6.0	0.38	7 58.1	2	14 43 45.25	0.265	13 29 48.2	1.91	5 56.5
3	14 43 24.91	0.208	13 19 58.0	0.30	7 54.1	3	14 43 51.80	0.281	13 30 34.9	1.98	5 52.6
4	14 43 20.10	0.193	13 19 51.7	0.23	7 50.1	4	14 43 58.72	0.296	13 31 23.2	2.05	5 48.8
5	14 43 15.65	0.178	13 19 47.2	0.15	7 46.1	5	14 44 6.01	0.312	13 32 13.1	2.12	5 45.0
6	14 43 11.57	-0.163	-13 19 44.5	+0.08	7 42.1	6	14 44 13.68	+0.327	-13 33 4.5	-2.19	5 41.2
7	14 43 7.87	0.147	13 19 43.6	0.00	7 38.1	7	14 44 21.72	0.342	13 33 57.7	2.25	5 37.4
8	14 43 4.54	0.131	13 19 44.5	-0.07	7 34.1	8	14 44 30.12	0.358	13 34 52.5	2.32	5 33.6
9	14 43 1.59	0.115	13 19 47.2	0.14	7 30.1	9	14 44 38.88	0.373	13 35 48.8	2.38	5 29.8
10	14 42 59.02	0.099	13 19 51.8	0.22	7 26.1	10	14 44 48.00	0.388	13 36 46.7	2.45	5 26.1
11	14 42 56.83	-0.083	13 19 58.2	-0.29	7 22.2	11	14 44 57.49	+0.403	-13 37 46.2	-2.51	5 22.3
12	14 42 55.02	0.067	13 20 6.4	0.37	7 18.2	12	14 45 7.34	0.418	13 38 47.2	2.57	5 18.5
13	14 42 53.59	0.051	13 20 16.3	0.45	7 14.3	13	14 45 17.55	0.433	13 39 49.7	2.64	5 14.7
14	14 42 52.55	0.035	13 20 28.1	0.52	7 10.3	14	14 45 28.11	0.448	13 40 53.7	2.70	5 11.0
15	14 42 51.89	0.019	13 20 41.7	0.60	7 6.4	15	14 45 39.02	0.463	13 41 59.2	2.76	5 7.2
16	14 42 51.61	-0.003	-13 20 57.1	-0.68	7 2.4	16	14 45 50.28	+0.477	-13 43 6.1	-2.82	5 3.5
17	14 42 51.72	+0.013	13 21 14.3	0.77	6 58.5	17	14 46 1.88	0.491	13 44 14.5	2.88	4 59.8
18	14 42 52.22	0.029	13 21 33.3	0.83	6 54.6	18	14 46 13.83	0.505	13 45 24.3	2.94	4 56.1
19	14 42 53.10	0.045	13 21 54.1	0.90	6 50.7	19	14 46 26.12	0.519	13 46 35.5	2.99	4 52.3
20	14 42 54.36	0.061	13 22 16.7	0.98	6 46.8	20	14 46 38.74	0.533	13 47 48.0	3.05	4 48.6
21	14 42 55.99	+0.077	-13 22 41.0	-1.05	6 42.9	21	14 46 51.70	+0.547	-13 49 1.9	-3.11	4 44.9
22	14 42 58.01	0.093	13 23 7.1	1.13	6 39.0	22	14 47 5.00	0.561	13 50 17.2	3.16	4 41.2
23	14 43 0.41	0.108	13 23 34.9	1.20	6 35.1	23	14 47 18.63	0.575	13 51 33.8	3.22	4 37.5
24	14 43 3.20	0.124	13 24 4.5	1.28	6 31.2	24	14 47 32.58	0.589	13 52 51.7	3.27	4 33.8
25	14 43 6.37	0.140	13 24 35.9	1.35	6 27.3	25	14 47 46.85	0.602	13 54 10.9	3.33	4 30.1
26	14 43 9.91	+0.156	-13 25 9.0	-1.42	6 23.4	26	14 48 1.44	+0.615	-13 55 31.3	-3.38	4 26.4
27	14 43 13.83	0.172	13 25 43.8	1.49	6 19.6	27	14 48 16.36	0.628	13 56 53.0	3.43	4 22.7
28	14 43 18.13	0.187	13 26 20.3	1.56	6 15.7	28	14 48 31.59	0.641	13 58 15.9	3.48	4 19.0
29	14 43 22.80	0.203	13 26 58.5	1.63	6 11.9	29	14 48 47.13	0.654	13 59 40.0	3.53	4 15.3
30	14 43 27.85	0.219	13 27 38.4	1.70	6 8.0	30	14 49 2.98	0.667	14 1 5.4	3.58	4 11.7
31	14 43 33.27	+0.235	-13 28 20.0	-1.77	6 4.2	31	14 49 19.15	+0.680	-14 2 31.9	-3.62	4 8.0
32	14 43 39.07	+0.250	-13 29 3.3	-1.84	6 0.3	32	14 49 35.62	+0.693	-14 3 59.6	-3.67	4 4.4

Day of the Month.	6th.	18th.	21st.	29th.	Day of the Month.	6th.	14th.	22d.	30th.
Semidiameter	8.3	8.2	8.1	8.0	Semidiameter	7.9	7.8	7.7	7.6
Horizontal Parallax . . .	0.9	0.9	0.9	0.9	Horizontal Parallax . . .	0.9	0.9	0.9	0.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign - indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.										
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.					
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.						
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m					
1	14 49 35.62	+0.693	-14 3 59.6	-3.67	4 4.4	1	14 59 55.68	+1.007	-14 54 57.7	-4.68	2 16.7					
2	14 49 52.39	0.706	14 5 28.4	3.72	4 0.7	2	15 0 19.96	1.015	14 56 50.2	4.70	2 13.1					
3	14 50 9.47	0.718	14 6 58.3	3.76	3 57.1	3	15 0 44.43	1.023	14 58 43.1	4.72	2 9.6					
4	14 50 26.85	0.730	14 8 29.4	3.81	3 53.4	4	15 1 9.09	1.031	15 0 36.5	4.73	2 6.1					
5	14 50 44.52	0.742	14 10 1.5	3.86	3 49.8	5	15 1 33.93	1.039	15 2 30.3	4.75	2 2.6					
6	14 51 2.48	+0.754	-14 11 34.6	-3.90	3 46.1	6	15 1 58.96	+1.046	-15 4 24.5	-4.76	1 59.1					
7	14 51 20.73	0.766	14 13 8.8	3.95	3 42.5	7	15 2 24.16	1.053	15 6 19.0	4.78	1 55.6					
8	14 51 39.27	0.778	14 14 44.0	3.99	3 38.9	8	15 2 49.54	1.060	15 8 13.8	4.79	1 52.1					
9	14 51 58.09	0.790	14 16 20.2	4.03	3 35.3	9	15 3 15.09	1.067	15 10 9.0	4.81	1 48.6					
10	14 52 17.18	0.802	14 17 57.3	4.07	3 31.7	10	15 3 40.81	1.074	15 12 4.5	4.82	1 45.1					
11	14 52 36.55	+0.813	-14 19 35.4	-4.11	3 28.1	11	15 4 6.68	+1.081	-15 14 0.2	-4.83	1 41.6					
12	14 52 56.19	0.824	14 21 14.4	4.15	3 24.5	12	15 4 32.71	1.088	15 15 56.1	4.84	1 38.1					
13	14 53 16.09	0.835	14 22 54.3	4.18	3 20.9	13	15 4 58.90	1.094	15 17 52.1	4.84	1 34.6					
14	14 53 36.26	0.846	14 24 35.0	4.22	3 17.3	14	15 5 25.23	1.100	15 19 48.4	4.85	1 31.1					
15	14 53 56.69	0.856	14 26 16.5	4.25	3 13.7	15	15 5 51.70	1.106	15 21 44.9	4.85	1 27.6					
16	14 54 17.37	+0.867	-14 27 58.9	-4.28	3 10.1	16	15 6 18.31	+1.112	-15 23 41.5	-4.86	1 24.1					
17	14 54 38.30	0.877	14 29 42.1	4.32	3 6.5	17	15 6 45.07	1.118	15 25 38.3	4.86	1 20.6					
18	14 54 59.48	0.887	14 31 26.0	4.35	3 2.9	18	15 7 11.95	1.123	15 27 35.2	4.87	1 17.1					
19	14 55 20.91	0.897	14 33 10.7	4.38	2 59.4	19	15 7 38.95	1.128	15 29 32.1	4.87	1 13.6					
20	14 55 42.57	0.907	14 34 56.1	4.41	2 55.8	20	15 8 6.07	1.133	15 31 29.1	4.88	1 10.1					
21	14 56 4.47	+0.917	-14 36 42.2	-4.44	2 52.2	21	15 8 33.32	+1.138	-15 33 26.1	-4.88	1 6.7					
22	14 56 26.60	0.927	14 38 29.0	4.47	2 48.6	22	15 9 0.68	1.143	15 35 23.2	4.88	1 3.2					
23	14 56 48.96	0.937	14 40 16.5	4.50	2 45.1	23	15 9 28.15	1.147	15 37 20.3	4.88	0 59.7					
24	14 57 11.55	0.946	14 42 4.6	4.52	2 41.5	24	15 9 55.72	1.151	15 39 17.3	4.88	0 56.2					
25	14 57 34.36	0.955	14 43 53.3	4.55	2 38.0	25	15 10 23.40	1.155	15 41 14.3	4.87	0 52.8					
26	14 57 57.38	+0.964	-14 45 42.6	-4.57	2 34.4	26	15 10 51.18	+1.159	-15 43 11.2	-4.87	0 49.3					
27	14 58 20.62	0.973	14 47 32.5	4.60	2 30.9	27	15 11 19.05	1.163	15 45 8.1	4.87	0 45.8					
28	14 58 44.08	0.982	14 49 23.0	4.62	2 27.3	28	15 11 47.01	1.167	15 47 4.9	4.86	0 42.3					
29	14 59 7.74	0.991	14 51 14.0	4.64	2 23.8	29	15 12 15.06	1.171	15 49 1.6	4.86	0 38.9					
30	14 59 31.61	0.999	14 53 5.6	4.66	2 20.2	30	15 12 43.20	1.174	15 50 58.2	4.85	0 35.4					
31	14 59 55.68	+1.007	-14 54 57.7	-4.68	2 16.7	31	15 13 11.41	+1.177	-15 52 54.6	-4.84	0 31.9					
32	15 0 19.96	+1.015	-14 56 50.2	-4.70	2 13.1	32	15 13 39.70	+1.180	-15 54 50.8	-4.84	0 28.4					
Day of the Month.					7th.	15th.	23d.	Day of the Month.					1st.	9th.	17th.	25th.
Semidiameter					7.5	7.4	7.4	Semidiameter					7.3	7.3	7.2	7.2
Horizontal Parallax					0.9	0.8	0.8	Horizontal Parallax					0.8	0.8	0.8	0.8

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	15 13 39.70	+1.180	15 54 50.8	-4.84	0 28.4	1	15 27 59.41	+1.179	16 49 57.9	-4.24	22 41.4
2	15 14 8.06	1.183	15 56 46.8	4.83	0 25.0	2	15 28 27.68	1.176	16 51 39.3	4.21	22 37.9
3	15 14 36.49	1.186	15 58 42.6	4.82	0 21.5	3	15 28 55.87	1.173	16 53 20.0	4.18	22 34.4
4	15 15 4.97	1.189	16 0 38.2	4.81	0 18.1	4	15 29 23.98	1.170	16 54 59.9	4.15	22 30.9
5	15 15 33.50	1.191	16 2 33.5	4.80	0 14.6	5	15 29 52.01	1.166	16 56 39.0	4.11	22 27.4
6	15 16 2.09	+1.193	16 4 28.5	-4.79	0 11.2	6	15 30 19.94	+1.162	16 58 17.3	-4.08	22 23.9
7	15 16 30.73	1.195	16 6 23.2	4.78	0 7.8	7	15 30 47.78	1.158	16 59 54.8	4.05	22 20.5
8	15 16 59.40	1.196	16 8 17.6	4.76	0 4.3	8	15 31 15.52	1.154	17 1 31.6	4.01	22 17.0
9	15 17 28.11	1.197	16 10 11.6	4.75	0 0.9	9	15 31 43.15	1.149	17 3 7.5	3.98	22 13.5
10	15 17 56.85	1.198	16 12 5.3	4.73	23 53.9	10	15 32 10.67	1.144	17 4 42.5	3.94	22 10.0
11	15 18 25.62	+1.199	16 13 58.6	-4.72	23 50.5	11	15 32 38.07	+1.139	17 6 16.7	-3.91	22 6.6
12	15 18 54.41	1.200	16 15 51.5	4.70	23 47.0	12	15 33 5.35	1.134	17 7 49.9	3.87	22 3.1
13	15 19 23.21	1.200	16 17 44.0	4.68	23 43.6	13	15 33 32.51	1.129	17 9 22.3	3.83	21 59.6
14	15 19 52.02	1.201	16 19 36.0	4.66	23 40.1	14	15 33 59.53	1.123	17 10 53.8	3.79	21 56.1
15	15 20 20.84	1.201	16 21 27.6	4.64	23 36.7	15	15 34 26.41	1.117	17 12 24.4	3.75	21 52.7
16	15 20 49.66	+1.201	16 23 18.7	-4.62	23 33.2	16	15 34 53.16	+1.111	17 13 54.0	-3.72	21 49.2
17	15 21 18.48	1.200	16 25 9.3	4.60	23 29.8	17	15 35 19.76	1.105	17 15 22.8	3.68	21 45.7
18	15 21 47.30	1.200	16 26 59.4	4.58	23 26.3	18	15 35 46.21	1.099	17 16 50.6	3.64	21 42.2
19	15 22 16.11	1.199	16 28 49.0	4.56	23 22.9	19	15 36 12.51	1.093	17 18 17.4	3.60	21 38.7
20	15 22 44.90	1.199	16 30 38.0	4.53	23 19.4	20	15 36 38.65	1.086	17 19 43.2	3.56	21 35.2
21	15 23 13.67	+1.198	16 32 26.5	-4.51	23 16.0	21	15 37 4.63	+1.079	17 21 8.1	-3.52	21 31.7
22	15 23 42.42	1.197	16 34 14.5	4.49	23 12.5	22	15 37 30.44	1.072	17 22 32.0	3.48	21 28.2
23	15 24 11.15	1.196	16 36 1.9	4.46	23 9.1	23	15 37 56.07	1.065	17 23 54.9	3.44	21 24.7
24	15 24 39.84	1.194	16 37 48.7	4.44	23 5.6	24	15 38 21.53	1.057	17 25 16.8	3.40	21 21.2
25	15 25 8.49	1.192	16 39 34.8	4.41	23 2.1	25	15 38 46.81	1.049	17 26 37.7	3.35	21 17.7
26	15 25 37.10	+1.190	16 41 20.3	-4.39	22 58.6	26	15 39 11.90	+1.041	17 27 57.6	-3.31	21 14.2
27	15 26 5.67	1.188	16 43 5.2	4.36	22 55.2	27	15 39 36.80	1.033	17 29 16.4	3.27	21 10.6
28	15 26 34.19	1.186	16 44 49.4	4.33	22 51.7	28	15 40 1.51	1.025	17 30 34.2	3.22	21 7.1
29	15 27 2.65	1.184	16 46 32.9	4.30	22 48.3	29	15 40 26.02	1.017	17 31 50.9	3.18	21 3.6
30	15 27 31.06	1.182	16 48 15.8	4.27	22 44.8	30	15 40 50.32	1.008	17 33 6.5	3.13	21 0.1
31	15 27 59.41	+1.179	16 49 57.9	-4.24	22 41.4	31	15 41 14.40	+0.999	17 34 21.1	-3.09	20 56.5
32	15 28 27.68	+1.176	16 51 39.3	-4.21	22 37.9	32	15 41 38.27	+0.990	17 35 34.6	-3.04	20 53.0
Day of the Month.						Day of the Month.					
2d.						4th.					
10th.						12th.					
18th.						20th.					
26th.						28th.					
Semidiameter						Semidiameter					
Horizontal Parallax						Horizontal Parallax					
7.2						7.2					
0.8						0.8					
7.2						7.3					
0.8						0.8					
7.2						7.4					
0.8						0.8					

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.			Var. of R. A. for 1 Day.			Apparent Declination.			Var. of Decl. for 1 Day.			Meridian Passage.	Month and Day.	Apparent Right Ascension.			Var. of R. A. for 1 Day.			Apparent Declination.			Var. of Decl. for 1 Day.			Meridian Passage.
	h	m	s	s	"	"	h	m	s	s	"	"			h	m	s	s	"	"	h	m	s	s	"	"	
Jan. 3	15	23	22.96	+11.169	-18	17 52.3	-41.13	20	29.7	July 1	15	13 32.92	-5.426	-17	40 54.6	+19.92	8	32.0									
7	15	24	6.41	10.549	18	20 31.9	38.64	20	14.7	5	15	13 12.63	4.713	17	39 40.4	17.14	8	15.9									
11	15	24	47.28	9.880	18	23 1.2	35.98	19	59.6	9	15	12 55.26	3.967	17	38 37.7	14.18	7	59.9									
15	15	25	25.40	9.172	18	25 19.6	33.22	19	44.5	13	15	12 40.93	3.191	17	37 47.1	11.11	7	43.9									
19	15	26	0.61	8.429	18	27 26.8	30.37	19	29.4	17	15	12 29.76	2.393	17	37 8.9	7.98	7	28.0									
23	15	26	32.79	+7.655	-18	29 22.4	-27.41	19	14.2	21	15	12 21.80	-1.583	-17	36 43.3	+4.80	7	12.2									
27	15	27	1.82	6.856	18	31 6.0	24.42	18	58.9	25	15	12 17.11	-0.761	17	36 30.6	+1.54	6	56.4									
31	15	27	27.61	6.034	18	32 37.7	21.40	18	43.6	29	15	12 15.72	+0.067	17	36 31.0	-1.75	6	40.6									
Feb. 4	15	27	50.06	5.188	18	33 57.1	18.29	18	28.2	Aug. 2	15	12 17.66	0.905	17	36 44.6	5.06	6	24.9									
8	15	28	9.09	4.323	18	35 3.9	15.10	18	12.8	6	15	12 22.97	1.750	17	37 11.5	8.39	6	9.3									
12	15	28	24.62	+3.439	-18	35 57.9	-11.90	17	57.3	10	15	12 31.66	+2.595	-17	37 51.7	-11.71	5	53.7									
16	15	28	36.59	2.545	18	36 39.1	8.69	17	41.8	14	15	12 43.72	3.431	17	38 45.1	14.97	5	38.2									
20	15	28	44.97	1.647	18	37 7.4	5.47	17	26.2	18	15	12 59.10	4.257	17	39 51.4	18.17	5	22.6									
24	15	28	49.77	+0.752	-18	37 22.9	-2.28	17	10.5	22	15	13 17.76	5.067	17	41 10.4	21.31	5	7.1									
28	15	28	50.99	-0.139	18	37 25.7	+0.88	16	54.8	26	15	13 39.62	5.862	17	42 41.7	24.37	4	51.8									
Mar. 3	15	28	48.67	-1.019	-18	37 15.9	+4.02	16	39.0	30	15	14 4.64	+6.643	-17	44 25.1	-27.33	4	36.6									
7	15	28	42.85	1.890	18	36 53.6	7.12	16	23.2	Sept. 3	15	14 32.74	7.406	17	46 20.2	30.22	4	21.4									
11	15	28	33.57	2.745	18	36 19.0	10.17	16	7.3	7	15	15 3.86	8.150	17	48 26.7	32.99	4	6.2									
15	15	28	20.92	3.577	18	35 32.3	13.14	15	51.4	11	15	15 37.90	8.865	17	50 43.9	35.60	3	51.0									
19	15	28	4.99	4.380	18	34 34.0	15.99	15	35.4	15	15	16 14.74	9.549	17	53 11.3	38.08	3	35.9									
23	15	27	45.93	-5.145	-18	33 24.5	+18.72	15	19.3	19	15	16 54.25	+10.201	-17	55 48.3	-40.39	3	20.8									
27	15	27	23.89	5.865	18	32 4.4	21.33	15	3.2	23	15	17 36.30	10.818	17	58 34.2	42.55	3	5.8									
31	15	26	59.06	6.545	18	30 34.0	23.81	14	47.1	27	15	18 20.75	11.404	18	1 28.5	44.60	2	50.8									
Apr. 4	15	26	31.58	7.186	18	28 54.1	26.14	14	30.9	Oct. 1	15	19 7.49	11.959	18	4 30.8	46.47	2	35.9									
8	15	26	1.64	7.774	18	27 5.1	28.32	14	14.6	5	15	19 56.38	12.479	18	7 40.0	48.15	2	21.1									
12	15	25	29.46	-8.309	-18	25 7.8	+30.33	13	58.4	9	15	20 47.27	+12.957	-18	10 55.6	-49.64	2	6.1									
16	15	24	55.25	8.782	18	23 2.8	32.08	13	42.1	13	15	21 39.98	13.391	18	14 16.9	50.97	1	51.2									
20	15	24	19.29	9.188	18	20 51.5	33.59	13	25.7	17	15	22 34.34	13.780	18	17 43.1	52.08	1	36.4									
24	15	23	41.83	9.530	18	18 34.4	34.93	13	9.4	21	15	23 30.16	14.123	18	21 13.3	53.01	1	21.6									
28	15	23	3.14	9.805	18	16 12.4	36.03	12	53.0	25	15	24 27.27	14.427	18	24 47.0	53.79	1	6.8									
May 2	15	22	23.47	-10.018	-18	13 46.5	+36.89	12	36.6	29	15	25 25.52	+14.690	-18	28 23.4	-54.38	0	52.0									
6	15	21	43.08	10.165	18	11 17.6	37.52	12	20.2	Nov. 2	15	26 24.73	14.906	18	32 1.8	54.77	0	37.3									
10	15	21	2.24	10.242	18	8 46.7	37.88	12	3.8	6	15	27 24.70	15.070	18	35 41.4	55.00	0	22.6									
14	15	20	21.24	10.245	18	6 14.9	37.98	11	47.4	10	15	28 25.22	15.182	18	39 21.5	55.01	0	7.8									
18	15	19	40.38	10.174	18	3 43.2	37.80	11	31.0	14	15	29 26.09	15.243	18	43 1.2	54.82	23	49.4									
22	15	18	59.94	-10.036	-18	1 12.9	+37.33	11	14.6	18	15	30 27.10	+15.255	-18	46 39.8	-54.45	23	34.7									
26	15	18	20.18	9.832	17	58 44.9	36.62	10	58.2	22	15	31 28.07	15.222	18	50 16.6	53.94	23	20.0									
30	15	17	41.37	9.565	17	56 20.2	35.70	10	41.9	26	15	32 28.81	15.140	18	53 51.1	53.27	23	5.3									
June 3	15	17	3.74	9.240	17	53 59.6	34.53	10	25.5	30	15	33 29.12	15.006	18	57 22.5	52.40	22	50.5									
7	15	16	27.53	8.854	17	51 44.3	33.08	10	9.2	Dec. 4	15	34 28.79	14.820	19	0 50.1	51.38	22	35.8									
11	15	15	52.99	-8.404	-17	49 35.3	+31.39	9	52.9	8	15	35 27.61	+14.581	-19	4 13.3	-50.17	22	21.1									
15	15	15	20.37	7.898	17	47 33.5	29.47	9	36.6	12	15	36 25.37	14.290	19	7 31.3	48.81	22	6.3									
19	15	14	49.87	7.342	17	45 39.8	27.35	9	20.4	16	15	37 21.86	13.948	19	10 43.6	47.31	21	51.5									
23	15	14	21.69	6.741	17	43 55.0	25.04	9	4.2	20	15	38 16.89	13.558	19	13 49.6	45.68	21	36.7									
27	15	13	55.99	6.102	17	42 19.7	22.58	8	48.1	24	15	39 10.27	13.126	19	16 48.9	45.93	21	21.8									
July 1	15	13	32.92	-5.426	-17	40 54.6	+19.92	8	32.0	28	15	40 1.84	+12.648	-19	19 40.9	-42.05	21	6.9									
5	15	13	12.63	-4.713	-17	39 40.4	+17.14	8	15.9	32	15	40 51.39	+12.120	-19	22 25.1	-40.02	20	52.0									

Greatest semidiameter.

Least semidiameter.

May 14, 1".89

November 16, 1".70

Greatest horizontal parallax.

Least horizontal parallax.

May 14, 0".90

November 16, 0".45

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
Jan. 3	4 59 39.78	-6.321	+21 14 29.9	-7.35	10 7.5	July 1	5 10 57.95	+9.072	+21 35 53.0	+10.14	22 27.3
7	4 59 15.09	6.015	21 14 1.7	6.76	9 51.3	5	5 11 33.86	8.876	21 36 32.5	9.61	22 12.1
11	4 58 51.71	5.668	21 13 35.8	6.11	9 35.2	9	5 12 8.92	8.648	21 37 9.9	9.09	21 57.0
15	4 58 29.79	5.281	21 13 12.8	5.39	9 19.1	13	5 12 43.01	8.389	21 37 45.2	8.51	21 41.8
19	4 58 9.50	4.858	21 12 52.7	4.66	9 3.1	17	5 13 16.00	8.099	21 38 18.1	7.90	21 26.6
23	4 57 50.96	-4.405	+21 12 35.5	-3.89	8 47.0	21	5 13 47.77	+7.781	+21 38 48.4	+7.31	21 11.4
27	4 57 34.29	3.985	21 12 21.6	3.04	8 31.1	25	5 14 18.22	7.438	21 39 16.6	6.74	20 56.2
31	4 57 19.59	3.421	21 12 11.2	2.16	8 15.1	29	5 14 47.25	7.072	21 39 42.3	6.12	20 40.9
Feb. 4	4 57 6.94	2.900	21 12 4.3	1.27	7 59.2	Aug. 2	5 15 14.77	6.680	21 40 5.6	5.50	20 25.7
8	4 56 56.41	-2.359	+21 12 0.8	-0.36	7 43.3	6	5 15 40.66	6.260	21 40 26.3	4.85	20 10.4
12	4 56 48.09	-1.797	+21 12 1.2	+0.54	7 27.4	10	5 16 4.82	+5.814	+21 40 44.4	+4.20	19 55.0
16	4 56 42.05	1.222	21 12 5.1	1.46	7 11.6	14	5 16 27.15	5.348	21 40 59.9	3.55	19 39.7
20	4 56 38.32	0.641	21 12 12.9	2.40	6 55.8	18	5 16 47.58	4.863	21 41 12.8	2.91	19 24.3
24	4 56 36.93	-0.054	21 12 24.3	3.30	6 40.0	22	5 17 6.03	4.360	21 41 23.2	2.29	19 8.8
28	4 56 37.89	+0.530	21 12 39.3	4.21	6 24.3	26	5 17 22.44	3.841	21 41 31.1	1.65	18 53.4
Mar. 3	4 56 41.18	+1.116	+21 12 58.0	+5.11	6 8.6	30	5 17 36.74	+3.308	+21 41 36.4	+1.01	18 37.9
7	4 56 46.81	1.697	21 13 20.2	5.97	5 53.0	Sept. 3	5 17 48.89	2.761	21 41 39.2	+0.40	18 22.3
11	4 56 54.75	2.276	21 13 45.8	6.82	5 37.4	7	5 17 58.82	2.200	21 41 39.6	-0.21	18 6.8
15	4 57 5.01	2.848	21 14 14.8	7.64	5 21.9	11	5 18 6.48	1.666	21 41 37.5	0.82	17 51.2
19	4 57 17.52	3.406	21 14 46.9	8.40	5 6.4	15	5 18 11.83	1.053	21 41 33.0	1.42	17 35.5
23	4 57 32.24	+3.949	+21 15 22.0	+9.12	4 50.9	19	5 18 14.90	+0.482	+21 41 26.1	-2.00	17 19.8
27	4 57 49.09	4.473	21 15 59.9	9.80	4 35.4	23	5 18 15.68	-0.095	21 41 17.0	2.56	17 4.1
31	4 58 8.00	4.979	21 16 40.4	10.42	4 20.0	27	5 18 14.14	0.672	21 41 5.6	3.12	16 48.4
Apr. 4	4 58 28.90	5.468	21 17 23.3	11.01	4 4.6	Oct. 1	5 18 10.31	1.240	21 40 52.0	3.64	16 32.6
8	4 58 51.72	5.935	21 18 8.5	11.55	3 49.3	5	5 18 4.23	1.804	21 40 36.5	4.14	16 16.8
12	4 59 16.36	+6.382	+21 18 55.7	+12.01	3 34.0	9	5 17 55.89	-2.357	+21 40 18.9	-4.64	16 0.9
16	4 59 42.75	6.804	21 19 44.6	12.42	3 18.7	13	5 17 45.39	2.895	21 39 59.3	5.12	15 45.0
20	5 0 10.76	7.194	21 20 35.1	12.79	3 3.4	17	5 17 32.77	3.412	21 39 37.9	5.56	15 29.0
24	5 0 40.27	7.557	21 21 26.9	13.07	2 48.2	21	5 17 18.12	3.910	21 39 14.8	5.97	15 13.0
28	5 1 11.19	7.897	21 22 19.7	13.30	2 33.0	25	5 17 1.52	4.384	21 38 50.1	6.36	14 57.0
May 2	5 1 43.42	+8.209	+21 23 13.3	+13.49	2 17.8	29	5 16 43.09	-4.830	+21 38 23.9	-6.72	14 41.0
6	5 2 16.83	8.489	21 24 7.6	13.61	2 2.6	Nov. 2	5 16 22.91	5.254	21 37 56.3	7.04	14 24.9
10	5 2 51.30	8.739	21 25 2.3	13.69	1 47.4	6	5 16 1.10	5.645	21 37 27.6	7.31	14 8.8
14	5 3 26.71	8.959	21 25 57.1	13.69	1 32.3	10	5 15 37.80	5.995	21 36 57.8	7.57	13 52.7
18	5 4 2.93	9.144	21 26 51.8	13.64	1 17.2	14	5 15 13.19	6.303	21 36 27.0	7.79	13 36.6
22	5 4 39.82	+9.296	+21 27 46.2	+13.52	1 2.1	18	5 14 47.42	6.575	+21 35 55.5	-7.95	13 20.4
26	5 5 17.26	9.418	21 28 40.0	13.37	0 47.0	22	5 14 20.64	6.808	21 35 23.4	8.06	13 4.2
30	5 5 55.13	9.510	21 29 33.2	13.19	0 31.9	26	5 13 53.01	6.997	21 34 51.0	8.12	12 48.1
June 3	5 6 33.30	9.569	21 30 25.5	12.95	0 16.8	30	5 13 24.73	7.137	21 34 18.4	8.15	12 31.9
7	5 7 11.64	9.596	21 31 16.8	12.67	0 1.7	Dec. 4	5 12 55.95	7.237	21 33 45.8	8.12	12 15.7
11	5 7 50.03	+9.591	+21 32 6.9	+12.34	23 42.8	8	5 12 26.89	-7.285	+21 33 13.4	-8.04	11 59.4
15	5 8 28.33	9.550	21 32 55.5	11.95	23 27.7	12	5 11 57.73	7.285	21 32 41.5	7.89	11 43.2
19	5 9 6.39	9.476	21 33 42.5	11.54	23 12.6	16	5 11 28.67	7.234	21 32 10.3	7.69	11 27.0
23	5 9 44.10	9.371	21 34 27.8	11.11	22 57.5	20	5 10 59.91	7.139	21 31 40.0	7.42	11 10.8
27	5 10 21.32	9.236	21 35 11.4	10.65	22 42.4	24	5 10 31.61	6.999	21 31 10.9	7.11	10 54.6
July 1	5 10 57.95	+9.072	+21 35 53.0	+10.14	22 27.3	28	5 10 3.97	-6.815	+21 30 43.1	-6.79	10 38.5
5	5 11 33.86	+8.876	+21 36 32.5	+9.61	22 12.1	32	5 9 37.15	-6.583	+21 30 16.6	-6.37	10 22.3

Greatest semidiameter,
Least semidiameter,

December 9, = 1".33
June 10, = 1".25

Greatest horizontal parallax, December 9, = 0".31
Least horizontal parallax, June 10, = 0".29

MERCURY.									
GREENWICH MEAN NOON.									
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—		
							At Date.	At Intermediate Date.	
Jan. -1	297 21 50.8	3 8 46.6	+ 8 9.4	-6 35 44.8	- 7 43.5	9.6414813	0.1470929	0.1446651	
1	303 46 38.4	3 16 13.0	5 45.1	6 49 0.0	5 28.4	9.6332853	0.1420075	0.1391102	
3	310 27 31.8	3 24 53.1	+ 2 56.6	6 57 24.2	- 2 51.9	9.6240253	0.1359623	0.1325515	
5	317 27 3.7	3 34 52.6	- 0 9.5	7 0 10.9	+ 0 9.7	9.6137261	0.1288649	0.1248879	
7	324 47 58.9	3 46 17.1	3 24.4	6 56 26.0	3 40.3	9.6024369	0.1206048	0.1159989	
9	332 33 11.1	3 59 10.0	- 6 35.5	-6 45 8.0	+ 7 43.3	9.5902404	0.1110523	0.1057455	
11	340 45 39.0	4 13 32.9	9 26.4	6 25 9.7	12 20.8	9.5772683	0.1000585	0.0939697	
13	349 28 20.6	4 29 22.3	11 37.3	5 55 22.4	17 31.9	9.5637179	0.0874576	0.0804987	
15	358 43 58.5	4 46 27.1	12 46.5	5 14 43.4	23 11.1	9.5498697	0.0730703	0.0651504	
17	8 34 43.0	5 4 25.2	12 32.9	4 22 28.0	29 5.3	9.5361082	0.0567187	0.0477557	
19	19 1 48.1	5 22 39.0	-10 42.6	-3 18 27.5	+34 51.5	9.5229310	0.0382459	0.0281800	
21	30 4 53.8	5 40 15.4	7 13.5	2 3 30.5	39 55.0	9.5109447	0.0175532	0.0063690	
23	41 41 38.2	5 56 4.4	- 2 25.3	-0 39 44.9	43 32.4	9.5008298	9.9946448	9.9824092	
25	53 47 4.0	6 8 42.6	+ 2 59.3	+0 49 11.3	44 58.4	9.4932719	9.9697087	9.9566053	
27	66 13 26.6	6 16 47.7	7 59.6	2 18 18.5	43 39.6	9.4888579	9.9431856	9.9295577	
29	78 50 34.8	6 19 19.9	+11 32.3	+3 41 53.7	+39 27.6	9.4879627	9.9158519	9.9022230	
31	91 26 44.8	6 15 49.9	12 52.0	4 54 29.1	32 46.7	9.4906648	9.8888474	9.8759183	
Feb. 2	103 50 5.9	6 6 38.1	11 47.2	5 51 53.0	24 26.5	9.4967291	9.8636413	9.8522271	
4	115 50 9.2	5 52 45.0	8 40.3	6 31 51.1	15 30.6	9.5056605	9.8418772	9.8327791	
6	127 18 55.3	5 35 36.4	+ 4 17.6	6 54 8.6	+ 6 54.2	9.5168082	9.8250914	9.8189356	
8	138 11 25.3	5 16 43.3	- 0 29.3	+7 0 6.9	- 0 43.9	9.5294777	9.8143882	9.8114736	
10	148 25 31.4	4 57 24.2	4 56.5	6 52 4.9	7 4.0	9.5430194	9.8101722	9.8104163	
12	158 1 24.8	4 38 38.8	8 33.8	6 32 43.2	12 4.1	9.5568795	9.8121020	9.8150975	
14	167 0 54.7	4 21 5.3	11 6.6	6 4 38.5	15 49.0	9.5706185	9.8192516	9.8244100	
16	175 26 48.7	4 5 5.4	12 30.9	5 30 9.4	18 30.6	9.5839063	9.8304123	9.8371073	
18	183 22 25.0	3 50 48.0	-12 51.6	+4 51 10.6	-20 20.6	9.5965064	9.8443555	9.8520291	
20	190 51 9.5	3 38 13.4	12 17.2	4 9 13.8	21 30.3	9.6082674	9.8600164	9.8682210	
22	197 56 24.4	3 27 17.4	10 58.3	3 25 29.6	22 9.2	9.6190543	9.8765607	9.8849660	
24	204 41 20.2	3 17 53.3	9 5.6	2 40 51.3	22 25.4	9.6288327	9.8933800	9.9017562	
26	211 8 53.8	3 9 53.7	6 49.4	1 55 59.3	22 24.2	9.6375569	9.9100572	9.9182536	
28	217 21 46.4	3 3 11.2	- 4 18.3	+1 11 23.1	-22 10.2	9.6452106	9.9263223	9.9342461	
Mar. 1	223 22 25.8	2 57 39.4	- 1 40.4	+0 27 25.0	21 46.6	9.6517894	9.9420116	9.9496095	
3	229 13 7.1	2 53 12.1	+ 0 57.3	-0 15 38.3	21 15.7	9.6572965	9.9570336	9.9642804	
5	234 55 53.9	2 49 44.3	3 29.3	0 57 33.8	20 39.0	9.6617381	9.9713475	9.9782348	
7	240 32 41.5	2 47 12.2	5 50.4	1 38 11.1	19 57.6	9.6651224	9.9849435	9.9914754	
9	246 5 17.7	2 45 32.6	+ 7 56.7	-2 17 21.2	-19 11.9	9.6674569	9.9978326	0.0040187	
11	251 35 25.8	2 44 43.7	9 44.1	2 54 55.8	18 22.0	9.6687472	0.0100369	0.0158908	
13	257 4 45.4	2 44 43.9	11 9.8	3 30 46.3	17 27.7	9.6689966	0.0215851	0.0271232	
15	262 34 54.1	2 45 33.0	12 10.9	4 4 43.4	16 28.8	9.6682057	0.0325078	0.0377433	
17	268 7 30.5	2 47 11.4	12 45.0	4 36 36.6	15 23.6	9.6663727	0.0428339	0.0477824	
19	273 44 13.4	2 49 40.2	+12 50.8	-5 6 13.2	-14 11.7	9.6634928	0.0525914	0.0572640	
21	279 26 46.1	2 53 1.6	12 26.2	5 33 18.2	12 51.7	9.6595594	0.0618028	0.0662094	
23	285 16 56.6	2 57 18.3	11 30.8	5 57 33.3	11 21.5	9.6545645	0.0704853	0.0746314	
25	291 16 38.7	3 2 34.0	10 4.3	6 18 36.0	9 39.0	9.6485007	0.0786480	0.0825353	
27	297 27 54.9	3 8 53.0	8 7.4	6 35 59.2	7 41.6	9.6413629	0.0862928	0.0899189	
29	303 52 56.4	3 16 20.4	+ 5 42.7	-6 49 10.2	- 5 26.2	9.6331512	0.0934117	0.0967682	
31	310 34 5.8	3 25 1.7	+ 2 53.9	-6 57 29.5	- 2 49.3	9.6238755	0.0999851	0.1030582	

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Apr.	0 310 34 5.8	3 25 1.7	+ 2 53.9	-6 57 29.5	- 2 49.3	9.6238755	0.0999851	0.1030582
	2 317 33 56.4	3 35 2.6	- 0 12.6	7 0 10.6	+ 0 12.8	9.6135616	0.1059818	0.1087494
	4 324 55 12.6	3 46 28.2	3 27.6	6 56 19.1	3 43.9	9.6022584	0.1113537	0.1137863
	6 332 40 48.3	3 59 22.5	6 38.3	6 44 53.5	7 47.4	9.5900500	0.1160374	0.1180956
	8 340 53 42.6	4 13 46.8	9 28.7	6 24 46.6	12 25.3	9.5770682	0.1199487	0.1215831
	10 349 36 53.1	4 29 37.2	-11 39.2	-5 54 49.7	+17 36.8	9.5635113	0.1229833	0.1241324
	12 358 53 1.7	4 46 42.5	12 47.0	5 14 0.2	23 16.4	9.5496623	0.1250128	0.1256044
	14 8 44 18.8	5 4 40.7	12 32.3	4 21 34.0	29 10.7	9.5359063	0.1258862	0.1258369
	16 19 11 55.5	5 22 54.7	10 40.1	3 17 22.9	34 56.5	9.5227431	0.1254338	0.1246531
	18 30 15 32.4	5 40 30.5	7 9.6	2 2 16.8	39 59.1	9.5107806	0.1234721	0.1218686
	20 41 52 44.6	5 56 16.8	- 2 20.6	-0 38 24.6	+43 34.8	9.5006999	0.1198213	0.1173107
	22 53 58 31.5	6 8 51.3	+ 3 4.4	+0 50 33.9	44 58.4	9.4931865	0.1143202	0.1108372
	24 66 25 7.4	6 16 52.9	8 3.7	2 19 38.5	43 56.9	9.4888243	0.1068526	0.1023618
	26 79 2 18.7	6 19 18.8	11 34.6	3 43 5.8	39 22.4	9.4879835	0.0973655	0.0918691
	28 91 38 20.9	6 15 43.3	12 52.2	4 55 28.6	34 39.2	9.4907391	0.0858830	0.0794222
	30 104 1 23.8	6 6 26.8	+11 45.2	+5 52 37.4	+24 18.6	9.4968508	0.0725062	0.0651567
May	2 116 1 0.8	5 52 30.1	8 36.8	6 32 19.2	15 22.4	9.5058202	0.0573984	0.0492583
	4 127 29 14.9	5 35 19.9	+ 4 13.3	6 54 21.0	+ 6 46.7	9.5169954	0.0407643	0.0319447
	6 138 21 10.2	5 16 26.0	- 0 33.7	7 0 5.5	- 0 50.2	9.5296819	0.0228282	0.0134427
	8 148 34 40.9	4 57 6.7	5 0.2	6 51 52.0	7 9.6	9.5432314	0.0038158	0.9939741
	10 158 10 0.4	4 38 22.2	- 8 36.6	+6 32 21.3	-12 8.0	9.5570919	9.9839435	9.9737500
	12 167 8 58.6	4 20 50.2	11 8.3	6 4 9.8	15 52.0	9.5708253	9.9634174	9.9529702
	14 175 34 24.0	4 4 51.9	12 31.6	5 29 35.7	18 52.6	9.5841033	9.9424322	9.9318277
	16 183 29 34.7	3 50 36.0	12 51.5	4 50 33.7	20 21.9	9.5966909	9.9211806	9.9105157
	18 190 57 56.8	3 38 3.0	12 16.3	4 8 34.7	21 51.2	9.6084274	9.8998582	9.8892354
	20 198 2 52.3	3 27 8.4	-10 56.9	+3 24 49.2	-22 9.9	9.6192086	9.8786752	9.8682077
	22 204 47 31.6	3 17 45.6	9 3.8	2 40 10.4	22 25.6	9.6289709	9.8578644	9.8476795
	24 211 14 50.9	3 9 47.3	6 47.1	1 55 18.3	22 24.1	9.6376785	9.8376892	9.8279322
	26 217 27 32.0	3 3 6.0	4 16.1	1 10 42.5	22 9.9	9.6453155	9.8184499	9.8092863
June	28 223 28 1.6	2 57 35.0	- 1 38.0	+0 26 45.1	21 46.6	9.6518778	9.8004878	9.7921023
	30 229 18 35.0	2 53 8.6	+ 0 59.9	-0 16 17.3	-21 15.4	9.6573686	9.7841798	9.7767715
	1 235 1 15.8	2 49 41.7	3 31.7	0 58 11.7	20 58.4	9.6617940	9.7699293	9.7637046
	3 240 37 59.0	2 47 10.5	5 52.6	1 38 47.8	19 56.9	9.6651624	9.7581467	9.7533028
	5 246 10 32.7	2 45 31.8	7 58.5	2 17 56.6	19 11.2	9.6674811	9.7492168	9.7459277
	7 251 40 39.6	2 44 43.4	9 45.8	2 55 29.7	18 21.2	9.6687558	9.7434688	9.7418654
	9 257 9 59.4	2 44 44.4	+11 11.1	-3 31 18.5	-17 26.8	9.6689897	9.7411354	9.7412893
	11 262 40 10.0	2 45 34.4	12 11.7	4 5 13.8	16 27.6	9.6681833	9.7423276	9.7442419
	13 268 12 49.7	2 47 13.4	12 45.4	4 37 5.0	15 22.6	9.6663348	9.7470159	9.7506253
	15 273 49 37.5	2 49 42.9	12 50.6	5 6 39.5	14 10.6	9.6634390	9.7550380	9.7602158
	17 279 32 16.6	2 53 5.2	12 25.5	5 33 42.0	12 50.4	9.6594898	9.7661159	9.7726915
	19 285 22 35.2	2 57 22.8	+11 29.5	-5 57 54.3	-11 20.0	9.6544787	9.7798928	9.7876683
	21 291 22 27.0	3 2 39.2	10 2.5	6 18 53.8	9 57.3	9.6483988	9.7959662	9.8047346
	23 297 33 54.6	3 8 59.3	8 5.3	6 36 13.5	7 39.6	9.6412449	9.8139224	9.8234809
	25 303 59 9.8	3 16 27.5	5 40.2	6 49 20.2	5 23.9	9.6330169	9.8333624	9.8435209
	27 310 40 34.9	3 25 10.2	+ 2 51.1	6 57 34.7	- 2 46.7	9.6237253	9.8539141	9.8645018
	29 317 40 43.6	3 35 12.2	- 0 15.5	-7 0 10.2	+ 0 15.8	9.6133962	9.8752457	9.8861098
	31 325 2 20.4	3 46 39.2	- 3 30.5	-6 56 12.2	+ 3 47.4	9.6020786	9.8970583	9.9080615

MERCURY.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
July	1 325 2 20.4	5 46 39.2	- 3 30.5	-6 56 12.2	+ 5 47.4	9.6020786	9.8970583	9.9080615
	3 332 48 19.7	5 59 35.0	6 41.2	6 44 39.1	7 51.4	9.5898573	9.9190879	9.9301075
	5 341 1 40.3	4 14 0.4	9 31.2	6 24 23.6	12 30.0	9.5768652	9.9410923	9.9520142
	7 349 45 19.0	4 29 52.2	11 40.4	5 54 17.2	17 41.8	9.5633017	9.9628457	9.9735596
	9 359 1 59.1	4 46 58.7	12 47.5	5 13 17.5	23 21.8	9.5494509	9.9841281	9.9945232
	11 8 53 48.8	5 4 57.2	-12 31.4	-4 20 40.3	+29 16.2	9.5357000	0.0047168	0.0146795
	13 19 21 58.4	5 23 11.2	10 37.5	3 16 18.7	35 1.5	9.5225506	0.0243821	0.0337946
	15 30 26 7.4	5 40 46.3	7 5.7	2 1 3.4	40 3.1	9.5106116	0.0428868	0.0516294
	17 42 3 47.9	5 56 29.8	- 2 15.6	-0 37 4.8	43 37.0	9.5005654	0.0599925	0.0679479
	19 54 9 57.8	6 9 1.0	+ 3 9.2	+0 51 56.2	44 58.6	9.4930962	0.0754700	0.0825361
	21 66 36 48.4	6 16 57.4	+ 8 7.6	+2 20 58.4	+43 34.1	9.4887858	0.0891260	0.0952236
	23 79 14 3.5	6 19 17.8	11 36.8	3 44 17.2	39 17.2	9.4880004	0.1008179	0.1059033
	25 91 49 59.1	6 15 57.4	12 52.2	4 56 28.3	32 32.4	9.4908098	0.1104782	0.1145466
	27 104 12 45.2	6 6 16.0	11 43.1	5 53 21.9	24 10.4	9.4969692	0.1181176	0.1212036
	29 116 11 56.6	5 52 15.8	8 33.3	6 32 47.2	15 14.3	9.5059777	0.1238204	0.1259878
	31 127 39 39.6	5 55 2.9	+ 4 9.0	+6 54 33.4	+ 6 39.2	9.5171812	0.1277261	0.1290576
Aug.	2 138 31 0.3	5 16 8.0	- 0 37.9	7 0 3.8	- 0 56.7	9.5298854	0.1300054	0.1305922
	4 148 43 56.1	4 56 49.4	5 3.9	6 51 38.8	7 14.8	9.5434434	0.1308406	0.1307721
	6 158 18 41.6	4 38 5.7	8 39.4	6 31 58.9	12 11.9	9.5573049	0.1304076	0.1297666
	8 167 17 7.8	4 20 34.9	11 10.1	6 3 40.7	15 54.9	9.5710335	0.1288671	0.1277255
	10 175 42 4.2	4 4 38.2	-12 32.3	+5 29 1.6	-18 34.6	9.5843024	0.1263575	0.1247765
	12 183 36 49.2	3 50 24.0	12 51.3	4 49 56.2	20 23.3	9.5968779	0.1229948	0.1210235
	14 191 4 48.6	3 37 52.4	12 15.4	4 7 55.0	21 32.0	9.6086005	0.1188726	0.1165504
	16 198 9 24.4	3 26 59.2	10 55.4	3 24 8.3	22 10.4	9.6193663	0.1140644	0.1114210
	18 204 53 46.6	3 17 37.8	9 1.8	2 39 29.0	22 25.8	9.6291127	0.1086254	0.1056823
	20 211 20 51.6	3 9 40.6	- 6 44.9	+1 54 36.9	-22 24.0	9.6378042	0.1025953	0.0993673
	22 217 33 20.4	3 3 0.4	4 13.5	1 10 1.5	22 9.6	9.6454250	0.0960005	0.0924959
	24 223 33 40.1	2 57 30.5	- 1 35.6	+0 26 4.9	21 45.7	9.6519712	0.0888546	0.0850763
	26 229 24 5.4	2 53 5.0	+ 1 2.1	-0 16 56.6	21 14.6	9.6574457	0.0811610	0.0771076
Sept.	28 235 6 39.9	2 49 39.0	3 33.8	0 58 49.9	20 57.8	9.6618550	0.0729145	0.0685798
	30 240 43 18.4	2 47 8.4	+ 5 54.6	-1 39 24.7	-19 56.3	9.6652074	0.0641013	0.0594760
	1 246 15 48.6	2 45 30.5	8 0.5	2 18 32.1	19 10.4	9.6675101	0.0547007	0.0497719
	3 251 45 54.1	2 44 43.2	9 47.2	2 56 3.6	18 20.4	9.6687689	0.0446860	0.0394391
	5 257 15 13.9	2 44 44.8	11 12.0	3 31 50.7	17 26.0	9.6689870	0.0340262	0.0284439
	7 262 45 25.9	2 45 35.4	12 12.4	4 5 44.2	16 26.6	9.6681646	0.0226869	0.0167509
	9 268 18 8.3	2 47 15.2	+12 45.9	-4 37 33.4	-15 21.5	9.6662999	0.0106318	0.0043254
	11 273 55 0.7	2 49 45.7	12 50.5	5 7 5.6	14 9.4	9.6633879	9.9978277	9.9911355
	13 279 37 46.2	2 53 8.6	12 24.9	5 34 5.6	12 49.1	9.6594223	9.9842458	9.9771571
	15 285 28 12.5	2 57 27.1	11 28.4	5 58 15.1	11 18.6	9.6543947	9.9698689	9.9623823
	17 291 28 14.2	3 2 44.6	10 0.9	6 19 11.5	9 35.6	9.6482981	9.9547003	9.9468280
	19 297 39 53.6	3 9 5.7	+ 8 3.3	-6 36 27.6	7 37.6	9.6411272	9.9387769	9.9305570
	21 304 5 22.7	3 16 35.2	5 37.8	6 49 30.2	5 21.6	9.6328824	9.9221866	9.9136887
	23 310 47 3.9	3 25 18.8	+ 2 48.4	6 57 39.8	- 2 44.1	9.6235741	9.9050944	9.8964425
	25 317 47 31.4	3 35 22.2	- 0 18.4	7 0 9.7	+ 0 18.8	9.6132288	9.8877811	9.8791706
	27 325 9 30.0	3 46 50.6	3 33.5	6 56 5.2	3 50.9	9.6018960	9.8706844	9.8624102
	29 332 55 53.3	3 59 47.8	- 6 43.9	-6 44 24.5	+ 7 55.4	9.5896612	9.8544523	9.8469321
	31 341 9 41.0	4 14 14.7	- 9 33.6	-6 24 0.4	+12 34.5	9.5766582	9.8390827	9.8337502

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
											At Date.	At Intermediate Date.
Oct.	1	341	9 41.0	4 14 14.7	- 9 33.6	-6 24 0.4	+12 34.5	9.5766582	9.8399827	9.8337592		
	3	349	53 49.5	4 30 7.6	11 42.0	5 53 44.4	17 46.9	9.5630873	9.8284231	9.8241438		
	5	359	11 1.5	4 47 15.2	12 47.9	5 12 34.0	23 27.2	9.5492344	9.8210896	9.8194173		
	7	9	3 25.0	5 5 14.4	12 30.3	4 19 46.0	29 22.0	9.5354884	9.8192631	9.8207288		
	9	19	32 9.2	5 23 28.2	10 35.0	3 15 13.6	35 6.7	9.5223523	9.8238740	9.8287076		
	11	30	36 51.2	5 41 1.8	- 7 1.7	-1 59 48.9	+40 7.2	9.5104371	9.8351845	9.8432075		
	13	42	15 1.8	5 56 43.5	- 2 10.7	-0 35 43.6	43 39.5	9.5004253	9.8526326	9.8632790		
	15	54	21 35.5	6 9 11.0	+ 3 14.2	+0 53 20.0	44 58.4	9.4930008	9.8749407	9.8873995		
	17	66	48 41.4	6 17 2.7	8 11.6	2 22 19.6	43 31.6	9.4887427	9.9004364	9.9138409		
	19	79	26 1.1	6 19 17.7	11 39.5	3 45 31.0	39 12.0	9.4880132	9.9274192	9.9409998		
	21	92	1 50.7	6 15 31.6	+12 52.2	+4 57 28.9	+32 25.0	9.4908773	9.9544360	9.9676043		
	23	104	24 19.8	6 6 5.0	11 40.9	5 54 6.9	24 2.2	9.4970857	9.9804097	9.9927759		
	25	116	23 5.1	5 52 1.0	8 29.7	6 33 15.6	15 6.0	9.5061336	0.0046498	0.0159949		
	27	127	50 16.0	5 34 45.8	+ 4 4.6	6 54 45.7	+ 6 31.6	9.5173659	0.0267898	0.0370279		
	29	138	41 1.3	5 15 50.1	- 0 42.3	7 0 2.0	- 1 3.2	9.5300888	0.0467072	0.0558367		
	31	148	53 21.2	4 56 31.5	- 5 7.7	+6 51 25.2	- 7 20.0	9.5436559	0.0644301	0.0725048		
Nov.	2	158	27 31.1	4 37 48.4	8 42.2	6 31 36.1	12 16.0	9.5575188	0.0800812	0.0871804		
	4	167	25 24.5	4 20 19.2	11 11.9	6 3 10.8	15 57.8	9.5712430	0.0938246	0.1000369		
	6	175	49 50.8	4 4 24.0	12 33.1	5 28 26.9	18 36.6	9.5845031	0.1058389	0.1112519		
	8	183	44 9.1	3 50 11.5	12 51.2	4 49 18.1	20 24.4	9.5970668	0.1162965	0.1209923		
	10	191	11 45.1	3 37 41.4	-12 14.6	+4 7 14.9	-21 32.8	9.6087757	0.1253572	0.1294086		
	12	198	16 0.1	3 26 49.6	10 53.9	3 23 27.0	22 10.7	9.6195264	0.1331622	0.1366327		
	14	205	0 4.7	3 17 29.6	8 59.9	2 38 47.3	22 25.8	9.6292569	0.1398339	0.1427783		
	16	211	26 54.7	3 9 33.8	6 42.6	1 53 55.3	22 25.8	9.6379321	0.1454773	0.1479415		
	18	217	39 11.0	3 2 54.8	4 11.0	1 9 20.3	22 9.3	9.6455363	0.1501798	0.1522005		
	20	223	39 20.5	2 57 26.0	- 1 33.1	+0 25 24.3	-21 45.3	9.6520657	0.1540122	0.1556224		
	22	229	29 37.6	2 53 1.4	+ 1 4.5	-0 17 36.1	21 14.1	9.6575234	0.1570344	0.1582561		
	24	235	12 5.7	2 49 36.2	3 36.2	0 59 28.3	20 37.2	9.6619163	0.1592916	0.1601448		
	26	240	48 39.5	2 47 6.6	5 56.7	1 40 1.8	19 55.6	9.6652522	0.1608188	0.1613168		
	28	246	21 7.0	2 45 29.5	8 2.2	2 19 7.8	19 9.7	9.6675385	0.1616408	0.1617924		
Dec.	30	251	51 11.1	2 44 42.8	+ 9 48.7	-2 56 37.8	-28 19.6	9.6687809	0.1617733	0.1615828		
	2	257	20 31.0	2 44 45.2	11 13.2	3 32 23.2	17 25.1	9.6689826	0.1612218	0.1606902		
	4	262	50 44.7	2 45 36.6	12 13.0	4 6 14.8	16 25.7	9.6681440	0.1599864	0.1591091		
	6	268	23 30.2	2 47 17.8	12 46.0	4 38 2.0	15 20.5	9.6662630	0.1580561	0.1568250		
	8	274	0 27.3	2 49 48.3	12 50.3	5 7 32.0	14 8.3	9.6633345	0.1554125	0.1538152		
	10	279	43 18.7	2 53 12.1	+12 24.3	-5 34 29.5	-12 47.8	9.6593524	0.1520287	0.1500478		
	12	285	33 52.9	2 57 31.5	11 27.5	5 58 36.2	11 17.0	9.6543081	0.1478669	0.1454800		
	14	291	34 4.4	3 2 50.2	9 59.6	6 19 29.4	9 33.9	9.6481947	0.1428800	0.1400588		
	16	297	45 56.0	3 9 12.3	8 1.3	6 36 41.8	7 35.7	9.6410070	0.1370083	0.1337186		
	18	304	11 39.3	3 16 42.9	5 35.3	6 49 40.1	5 19.4	9.6327456	0.1301795	0.1263793		
	20	310	53 37.0	3 25 27.8	+ 2 45.6	-6 57 44.9	- 2 41.5	9.6234210	0.1223061	0.1179463		
	22	317	54 23.4	3 35 32.3	- 0 21.5	7 0 9.1	+ 0 21.8	9.6130598	0.1132850	0.1083071		
	24	325	16 43.0	3 47 2.0	3 36.5	6 55 58.0	3 54.4	9.6017123	0.1029959	0.0973333		
	26	333	3 30.7	4 0 0.7	6 46.8	6 44 9.7	7 59.5	9.5894644	0.0713007	0.0848784		
	28	341	17 45.5	4 14 28.9	9 36.0	6 23 36.9	12 39.0	9.5764508	0.0780464	0.0707838		
	30	350	2 23.8	4 30 23.1	- 11 43.7	-5 53 11.1	+17 52.0	9.5628732	0.0630698	0.0548842		
	32	359	20 7.7	4 47 31.6	- 12 48.3	-5 11 50.2	+23 32.6	9.5490191	0.0462082	0.0370251		

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
	°	'	"						At Date.	At Intermediate Date.
Jan.	-1	160	46 40.0	1 37 26.0	+0 31.2	+3 22 50.9	+0 29.9	9.8567815	9.9582533	9.9651335
	+3	167	16 15.0	1 37 21.2	-0 9.6	3 23 32.3	-0 9.2	9.8566663	9.9718753	9.9784815
	7	173	45 27.9	1 37 15.0	0 49.9	3 21 37.7	0 48.0	9.8571808	9.9849537	9.9912952
	11	180	14 13.7	1 37 7.7	1 27.6	3 17 8.8	1 26.2	9.8574224	9.9975082	0.0035059
	15	186	42 27.8	1 36 59.2	2 0.8	3 10 9.8	2 3.0	9.8576878	0.0095618	0.0154089
	19	193	10 6.2	1 36 49.8	-2 27.9	+3 0 46.6	-2 38.2	9.8579735	0.0211412	0.0267620
	23	199	37 5.6	1 36 39.8	2 47.4	2 49 6.9	3 11.2	9.8582760	0.0322754	0.0376844
	27	206	3 23.6	1 36 29.2	2 58.5	2 35 20.3	3 41.6	9.8585913	0.0429916	0.0481994
	31	212	28 58.6	1 36 18.3	3 0.7	2 19 37.9	4 9.1	9.8589154	0.0533097	0.0583245
	Feb.	4	218	53 49.7	1 36 7.3	2 53.8	2 2 11.9	4 33.3	9.8592441	0.0632448
8		225	17 57.1	1 35 56.5	-2 38.2	+1 43 16.0	-4 54.0	9.8595737	0.0728076	0.0774524
12		231	41 21.9	1 35 46.0	2 14.8	1 23 4.9	5 10.9	9.8598997	0.0820087	0.0864785
16		238	4 5.9	1 35 36.1	1 44.8	1 1 53.8	5 24.0	9.8602179	0.0908638	0.0951671
20		244	26 11.7	1 35 26.9	1 9.7	0 39 58.6	5 33.0	9.8605248	0.0993908	0.1035370
24		250	47 42.5	1 35 18.6	-0 31.2	+0 17 35.7	5 37.8	9.8608165	0.1076079	0.1116051
28		257	8 42.0	1 35 11.3	+0 8.8	-0 4 58.4	-5 38.6	9.8610896	0.1155300	0.1193834
Mar. 3		263	29 14.4	1 35 3.1	0 48.3	0 27 27.3	5 33.2	9.8613405	0.1231662	0.1268786
7		269	49 24.0	1 34 59.9	1 25.4	0 49 34.5	5 27.8	9.8615663	0.1305215	0.1340949
11		276	9 15.4	1 34 56.0	1 58.4	1 11 4.2	5 16.4	9.8617643	0.1375995	0.1410361
Apr.	15	282	28 53.4	1 34 53.2	2 25.5	1 31 40.8	5 1.3	9.8619323	0.1444059	0.1477100
	19	288	48 22.7	1 34 51.5	+2 45.5	-1 51 9.6	-4 42.6	9.8620683	0.1509497	0.1541265
	23	295	7 47.4	1 34 50.9	2 57.5	2 9 16.7	4 20.5	9.8621706	0.1572418	0.1602967
	27	301	27 11.7	1 34 51.4	3 0.9	2 25 49.2	5 55.2	9.8622381	0.1632918	0.1662279
	31	307	46 39.7	1 34 52.8	2 55.5	2 40 35.0	5 27.2	9.8622700	0.1691054	0.1719242
	Apr. 4	314	6 14.8	1 34 54.9	2 41.6	2 53 23.6	5 56.7	9.8622658	0.1746842	0.1773850
	8	320	26 0.0	1 34 57.8	+2 19.9	-3 4 5.8	-2 24.0	9.8622256	0.1800263	0.1826081
	12	326	45 58.1	1 35 1.4	1 51.3	3 12 33.7	1 49.6	9.8621498	0.1851306	0.1875942
	16	333	6 11.5	1 35 5.4	1 17.3	3 18 40.9	1 13.8	9.8620395	0.1899994	0.1923469
	May	20	339	26 42.0	1 35 9.9	+0 39.5	3 22 22.9	-0 37.0	9.8618957	0.1946372
24		345	47 31.1	1 35 14.7	-0 0.3	3 23 36.6	+0 0.3	9.8617204	0.1990500	0.2011730
28		352	8 40.2	1 35 19.8	-0 40.1	-3 22 20.7	+0 37.6	9.8615155	0.2032409	0.2052532
May 2		358	30 10.4	1 35 25.3	1 17.9	3 18 35.8	1 14.7	9.8612835	0.2072098	0.2091105
6		4 52 2.6	1 35 30.9	1 51.9	3 12 24.2	1 51.0	9.8610272	0.2109537	0.2127394	
10		11 14 17.5	1 35 36.6	2 20.5	3 3 49.9	2 26.0	9.8607496	0.2144672	0.2161309	
14		17 36 55.7	1 35 42.5	2 42.2	2 52 58.6	2 59.3	9.8604542	0.2177483	0.2193014	
18		23 59 58.0	1 35 48.6	-2 55.9	-2 39 58.1	+3 30.6	9.8601444	0.2207971	0.2222351	
22		30 23 25.0	1 35 54.9	3 1.0	2 24 57.4	3 59.4	9.8598242	0.2236165	0.2249415	
June		26	36 47 17.3	1 36 1.4	2 57.0	2 8 7.1	4 25.3	9.8594973	0.2262099	0.2274220
	30	43 11 35.6	1 36 8.0	2 44.2	1 49 39.5	4 48.0	9.8591678	0.2285782	0.2296766	
	June 3	49 36 20.8	1 36 14.7	2 23.2	1 29 48.0	5 7.2	9.8588409	0.2307175	0.2317000	
	7	56 1 33.4	1 36 21.6	-1 55.0	-1 8 47.2	+5 22.6	9.8585178	0.2326235	0.2334871	
	11	62 27 14.1	1 36 28.7	1 21.0	0 46 52.7	5 34.0	9.8582054	0.2342010	0.2350340	
	15	68 53 23.2	1 36 35.9	0 42.9	0 24 20.9	5 41.2	9.8579008	0.2357191	0.2363436	
	19	75 20 1.2	1 36 43.1	-0 2.6	-0 1 28.8	5 44.1	9.8576057	0.2369003	0.2374164	
	23	81 47 8.1	1 36 50.3	+0 37.0	+0 21 26.0	5 42.6	9.8573657	0.2378056	0.2382570	
	27	88 14 43.5	1 36 57.3	+1 16.5	+0 44 6.1	+5 36.9	9.8571307	0.2385007	0.2388664	
	31	94 42 40.4	1 37 4.1	-1 51.3	-1 6 13.0	+5 26.5	9.8569232	0.2390038	0.2392427	

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth--	
											At Date.	At Intermediate Date.
July	1	94	42	46.4	1 37 4.1	+1 51.3	+1 6	13.9	+5 26.5	9.8569232	0.2390838	0.2392427
	5	101	11	15.6	1 37 10.4	2 20.4	1 27	32.3	5 12.0	9.8567461	0.2393422	0.2393822
	9	107	40	9.2	1 37 16.3	2 42.4	1 47	44.5	4 53.4	9.8566019	0.2393620	0.2392817
	13	114	9	24.8	1 37 21.4	2 56.2	2 6	34.8	4 31.0	9.8564924	0.2391412	0.2389410
	17	120	38	59.3	1 37 25.7	3 1.0	2 23	48.2	4 5.1	9.8564190	0.2386810	0.2383627
	21	127	8	49.0	1 37 29.0	+2 56.4	+2 39	11.3	+3 36.0	9.8563828	0.2379863	0.2375524
	25	133	38	49.6	1 37 31.1	2 42.9	2 52	31.9	3 3.9	9.8563840	0.2370615	0.2365142
	29	140	8	56.4	1 37 32.1	2 21.0	3 3	39.5	2 29.5	9.8564229	0.2359106	0.2352502
	Aug. 2	146	39	4.4	1 37 31.6	1 51.8	3 12	25.4	1 53.2	9.8564987	0.2345327	0.2337581
	6	153	9	7.9	1 37 29.8	1 16.9	3 18	43.0	1 15.4	9.8566106	0.2329257	0.2320357
	10	159	39	1.3	1 37 26.6	+0 38.1	+3 22	27.5	+0 36.7	9.8567571	0.2310876	0.2300815
	14	166	8	39.1	1 37 22.0	-0 2.4	3 23	36.3	-0 2.4	9.8569363	0.2290186	0.2278992
	18	172	37	55.9	1 37 16.1	0 43.0	3 22	8.8	0 41.3	9.8571457	0.2267237	0.2254934
	22	179	6	46.5	1 37 9.0	1 21.3	3 18	6.7	1 19.6	9.8573827	0.2242088	0.2228702
	26	185	35	6.1	1 37 0.6	1 55.4	3 11	33.5	1 56.8	9.8576440	0.2214782	0.2200333
	30	192	2	50.6	1 36 51.4	-2 23.6	+3 2	34.9	-2 32.2	9.8579264	0.2185350	0.2169831
	Sept. 3	198	29	56.7	1 36 41.5	2 44.6	2 51	18.5	3 5.6	9.8582261	0.2153772	0.2137168
	7	204	56	21.8	1 36 31.0	2 57.2	2 37	53.3	3 36.5	9.8585394	0.2120019	0.2102319
	11	211	22	4.0	1 36 20.1	3 0.9	2 22	30.2	4 4.5	9.8588623	0.2084076	0.2065289
	15	217	47	2.4	1 36 9.1	2 55.6	2 5	21.4	4 29.3	9.8591906	0.2045960	0.2026098
	19	224	11	17.1	1 35 58.3	-2 41.5	+1 46	40.3	-4 50.6	9.8595202	0.2005710	0.1984804
	23	230	34	49.0	1 35 47.7	2 19.5	1 26	41.2	5 8.2	9.8598468	0.1963381	0.1941444
	27	236	57	39.6	1 35 37.7	1 50.5	1 5	39.4	5 22.0	9.8601666	0.1918991	0.1896019
	Oct. 1	243	19	51.5	1 35 28.4	1 16.1	0 43	50.8	5 31.6	9.8604756	0.1872521	0.1848490
	5	249	41	27.8	1 35 19.9	-0 38.1	+0 21	31.6	5 37.2	9.8607699	0.1823920	0.1798803
	9	256	2	32.1	1 35 12.4	+0 1.8	-0 1	1.7	-5 38.7	9.8610462	0.1773136	0.1746913
	13	262	23	8.5	1 35 6.0	0 41.5	0 23	32.6	5 36.0	9.8613008	0.1720129	0.1692793
	17	268	43	21.5	1 35 0.7	1 19.2	0 45	44.8	5 29.4	9.8615310	0.1664906	0.1636462
	21	275	3	15.5	1 34 56.6	1 53.0	1 7	22.1	5 18.7	9.8617338	0.1607470	0.1577928
	25	281	22	55.4	1 34 53.7	2 21.2	1 28	9.1	5 4.2	9.8619069	0.1547835	0.1517180
	29	287	42	25.6	1 34 51.8	+2 42.6	-1 47	50.8	-4 46.0	9.8620482	0.1485959	0.1454156
	Nov. 2	294	1	50.6	1 34 51.0	2 56.0	2 6	13.1	4 24.6	9.8621561	0.1421761	0.1388761
	6	300	21	14.6	1 34 51.2	3 1.0	2 23	2.9	3 59.8	9.8622293	0.1355137	0.1320880
	10	306	40	41.7	1 34 52.4	2 57.0	2 38	8.2	3 32.3	9.8622668	0.1285980	0.1250427
	14	313	0	15.4	1 34 54.5	2 44.4	2 51	18.1	3 2.2	9.8622683	0.1214218	0.1177348
	18	319	19	58.7	1 34 57.2	+2 24.0	-3 2	23.1	-2 29.9	9.8622340	0.1139812	0.1101606
	22	325	39	54.4	1 35 0.7	1 56.7	3 11	14.8	1 55.7	9.8621640	0.1062722	0.1023151
	26	332	0	5.0	1 35 4.7	1 23.6	3 17	47.0	1 20.2	9.8620590	0.0982881	0.0941890
	30	338	20	32.5	1 35 9.2	0 46.3	3 21	54.7	0 43.5	9.8619205	0.0900162	0.0857677
	Dec. 4	344	41	18.6	1 35 14.0	+0 6.8	3 23	34.4	-0 6.3	9.8617500	0.0814405	0.0770325
	8	351	2	24.6	1 35 19.1	-0 33.1	-3 22	44.7	+0 31.2	9.8615497	0.0725414	0.0679655
	12	357	23	51.4	1 35 24.4	1 11.4	3 19	25.7	1 8.2	9.8613219	0.0633025	0.0585510
	16	3	45	40.1	1 35 30.0	1 46.3	3 13	39.5	1 44.7	9.8610693	0.0537100	0.0487779
	20	10	7	51.5	1 35 35.7	2 16.0	3 5	29.7	2 19.9	9.8607948	0.0437532	0.0386345
	24	16	30	26.1	1 35 41.6	2 39.0	2 55	2.0	2 53.6	9.8605020	0.0334197	0.0281060
	28	22	53	24.6	1 35 47.7	-2 54.2	2 42	23.4	+3 25.3	9.8601942	0.0226907	0.0171703
	32	29	16	47.8	1 35 54.0	-3 0.8	-2 27	42.9	+3 54.5	9.8598753	0.0115411	0.0057991

MARS.													
GREENWICH MEAN NOON.													
Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—		
											At Date.	At Intermediate Date.	
Jan.	3	238	55	55.6	31 18.46	+18.7	—0	19 38.3	—59.71	0.1827766	0.3682475	0.3663411	
	7	241	1	35.5	31 31.48	22.4	0	23 37.2	59.69	0.1812867	0.3644060	0.3624421	
	11	243	8	7.7	31 44.63	25.9	0	27 35.8	59.58	0.1797887	0.3604493	0.3584280	
	15	245	15	32.6	31 57.89	29.4	0	31 33.8	59.38	0.1782845	0.3563784	0.3543017	
	19	247	23	51.0	32 11.29	32.7	0	35 30.8	59.10	0.1767763	0.3521983	0.3500688	
	23	249	33	3.1	32 24.80	+35.8	—0	39 26.6	—58.71	0.1752660	0.3479145	0.3457365	
	27	251	43	9.6	32 38.45	38.8	0	43 20.5	58.23	0.1737558	0.3435354	0.3413119	
	31	253	54	10.8	32 52.16	41.5	0	47 12.4	57.64	0.1722481	0.3390661	0.3367985	
	Feb.	4	256	6	7.0	33 5.93	44.0	0	51 1.6	56.94	0.1707449	0.3345091	0.3321979
		8	258	18	58.3	33 19.72	46.3	0	54 47.9	56.15	0.1692490	0.3298651	0.3275105
12		260	32	44.8	33 33.50	+48.2	—0	58 30.9	—55.26	0.1677625	0.3251347	0.3227385	
16		262	47	26.3	33 47.29	50.0	1	2 10.0	54.23	0.1662880	0.3203226	0.3178878	
20		265	3	3.0	34 1.02	51.4	1	5 44.7	53.09	0.1648281	0.3154354	0.3129663	
24		267	19	34.5	34 14.72	52.6	1	9 14.7	51.85	0.1633854	0.3104811	0.3079808	
28		269	37	0.7	34 28.35	53.4	1	12 39.5	50.49	0.1619626	0.3054660	0.3029370	
Mar.		3	271	55	21.2	34 41.86	+53.8	—1	15 58.6	—49.01	0.1605622	0.3003934	0.2978357
	7	274	14	35.4	34 55.17	53.9	1	19 11.6	47.40	0.1591870	0.2952638	0.2926773	
	11	276	34	42.5	35 8.25	53.6	1	22 17.8	45.67	0.1578395	0.2900763	0.2874619	
	15	278	55	41.5	35 21.17	53.1	1	25 17.0	43.84	0.1565223	0.2848342	0.2821942	
	19	281	17	31.5	35 33.87	52.0	1	28 8.5	41.87	0.1552389	0.2795428	0.2768814	
	23	283	40	11.7	35 46.19	+50.5	—1	30 52.0	—39.80	0.1539913	0.2742102	0.2715299	
	27	286	3	40.8	35 58.21	48.9	1	33 26.9	37.61	0.1527827	0.2688416	0.2661447	
	31	288	27	57.4	36 9.97	46.9	1	35 52.9	35.31	0.1516157	0.2634396	0.2607259	
	Apr.	4	290	53	0.2	36 21.34	44.5	1	38 9.4	32.89	0.1504924	0.2580035	0.2552720
		8	293	18	47.7	36 32.26	41.8	1	40 16.0	30.37	0.1494161	0.2525308	0.2497804
12		295	45	17.9	36 42.74	+38.8	—1	42 12.4	—27.76	0.1483890	0.2470210	0.2442527	
16		298	12	29.0	36 52.71	35.3	1	43 58.1	25.04	0.1474135	0.2414767	0.2386931	
20		300	40	19.1	37 2.16	31.8	1	45 32.7	22.24	0.1464923	0.2359029	0.2331065	
24		303	8	46.0	37 11.08	27.8	1	46 56.0	19.40	0.1456275	0.2303040	0.2274953	
28		305	37	47.3	37 19.42	23.8	1	48 7.9	16.40	0.1448214	0.2246800	0.2218580	
May		2	308	7	20.8	37 27.17	+19.5	—1	49 7.2	—13.34	0.1440760	0.2190281	0.2161896
	6	310	37	24.1	37 34.28	15.1	1	49 54.5	10.27	0.1433931	0.2133416	0.2104837	
	10	313	7	54.4	37 40.74	10.5	1	50 29.4	7.14	0.1427749	0.2076158	0.2047375	
	14	315	38	49.3	37 46.51	5.8	1	50 51.6	3.95	0.1422228	0.2018491	0.1989504	
	18	318	10	5.8	37 51.58	+ 1.1	1	51 1.0	—0.73	0.1417382	0.1960418	0.1931236	
	22	320	41	41.2	37 55.93	— 3.7	—1	50 57.5	+ 2.49	0.1413226	0.1901958	0.1872576	
	26	323	13	32.5	37 59.51	8.4	1	50 41.1	5.74	0.1409767	0.1843084	0.1813473	
	30	325	45	36.6	38 2.38	13.0	1	50 11.6	8.99	0.1407022	0.1783728	0.1753838	
	June	3	328	17	50.8	38 4.50	17.6	1	49 29.2	12.22	0.1404995	0.1723787	0.1693563
		7	330	50	11.9	38 5.85	22.0	1	48 33.8	15.45	0.1403691	0.1663153	0.1632555
11		333	22	36.8	38 6.41	—26.3	—1	47 25.6	+18.62	0.1403114	0.1601755	0.1570757	
15		335	55	2.4	38 6.20	30.4	1	46 4.8	21.76	0.1403263	0.1531555	0.1508147	
19		338	27	25.6	38 5.21	34.2	1	44 31.5	24.86	0.1404143	0.1476530	0.1444694	
July	23	340	59	43.3	38 3.42	37.8	1	42 45.9	27.89	0.1405747	0.1412627	0.1380317	
	27	343	31	52.2	38 0.85	41.0	1	40 48.4	30.84	0.1408072	0.1347741	0.1314878	
	1	346	3	49.4	37 57.59	—43.9	—1	38 39.2	+33.72	0.1411115	0.1281718	0.1248233	
	5	348	35	32.2	37 53.61	—46.5	—1	36 18.6	+36.50	0.1414861	0.1214404	0.1180224	

MARS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—			
							At Date.	At Interme- diate Date.		
July	1	346 3 49.4	37 57.59	-43.9	-1 38 39.2	+33.74	0.1411115	0.1281718	0.1248233	
	5	348 35 32.2	37 53.61	46.5	1 36 18.6	36.50	0.1414861	0.1214404	0.1180224	
	9	351 6 57.6	37 48.89	48.7	1 33 47.2	39.19	0.1419303	0.1145681	0.1110757	
	13	353 38 2.6	37 43.48	50.5	1 31 5.1	41.79	0.1424430	0.1075453	0.1039759	
	17	356 8 44.7	37 37.35	52.0	1 28 13.0	44.24	0.1430226	0.1003670	0.0967168	
	21	358 39 0.7	37 30.54	-53.1	-1 25 11.2	+46.60	0.1436678	0.0930245	0.0892884	
	25	1 8 48.3	37 23.09	53.7	1 22 0.2	48.81	0.1443767	0.0855061	0.0816746	
	29	3 38 4.8	37 14.99	53.9	1 18 40.7	50.89	0.1451473	0.0777919	0.0738551	
	Aug.	2	6 6 47.6	37 6.38	53.7	1 15 13.1	52.85	0.1459778	0.0698625	0.0658116
		6	8 34 55.3	36 57.26	53.2	1 11 37.9	54.69	0.1468661	0.0617009	0.0575300
	10	11 2 25.1	36 47.50	-52.2	-1 7 55.6	+56.39	0.1478098	0.0532961	0.0489995	
	14	13 29 14.8	36 37.30	50.6	1 4 6.8	57.92	0.1488067	0.0446398	0.0402147	
	18	15 55 23.1	36 26.67	49.0	1 0 12.2	59.31	0.1498543	0.0357242	0.0311652	
	22	18 20 47.8	36 15.55	47.1	0 56 12.3	60.57	0.1509500	0.0265360	0.0218341	
	26	20 45 27.2	36 4.02	44.7	0 52 7.6	61.69	0.1520913	0.0170575	0.0122024	
	30	23 9 19.7	35 52.20	-41.8	-0 47 58.8	+62.66	0.1532756	0.0072672	0.0022504	
	Sept.	3	25 32 24.6	35 40.10	38.9	0 43 46.3	63.51	0.1545003	0.9971498	9.9919649
		7	27 54 40.3	35 27.64	35.9	0 39 30.7	64.20	0.1557627	9.9866953	9.9813413
		11	30 16 5.5	35 14.89	32.4	0 35 12.7	64.76	0.1570598	9.9759027	9.9703804
		15	32 36 39.2	35 1.92	28.8	0 30 52.6	65.20	0.1583891	9.9647746	9.9590855
	19	34 56 20.6	34 48.77	-25.0	-0 26 31.1	+65.50	0.1597479	9.9533112	9.9474520	
	23	37 15 9.1	34 35.43	21.1	0 22 8.6	65.69	0.1611334	9.9415073	9.9354765	
	27	39 33 3.9	34 21.96	17.0	0 17 45.6	65.74	0.1625429	9.9293608	9.9231609	
	Oct.	1	41 50 4.7	34 8.40	12.9	0 13 22.7	65.65	0.1639739	9.9168792	9.9105198
		5	44 6 11.1	33 54.76	8.7	0 9 0.4	65.30	0.1654235	9.9040871	9.8975871
	9	46 21 22.8	33 41.07	-4.5	-0 4 38.7	+65.24	0.1668890	9.8910260	9.8844129	
	13	48 35 39.7	33 27.36	-0.3	-0 0 18.5	64.83	0.1683682	9.8777558	9.8710624	
	17	50 49 1.7	33 13.65	+3.9	+0 3 59.9	64.34	0.1698580	9.8643421	9.8576059	
	21	53 1 28.9	32 59.94	8.0	0 8 16.2	63.77	0.1713566	9.8508644	9.8441302	
	25	55 13 1.2	32 46.30	12.0	0 12 30.1	63.11	0.1728612	9.8374174	9.8307439	
	29	57 23 39.3	32 32.71	+16.0	+0 16 41.1	+62.35	0.1743693	9.8241284	9.8175927	
	Nov.	2	59 33 22.9	32 19.19	19.8	0 20 48.9	61.52	0.1758789	9.8111640	9.8048687
		6	61 42 12.9	32 5.78	23.5	0 24 53.3	60.61	0.1773879	9.7987371	9.7928005
	10	63 50 9.4	31 52.49	27.0	0 28 53.8	59.64	0.1788941	9.7870929	9.7816467	
	14	65 57 13.0	31 39.36	30.5	0 32 50.4	58.60	0.1803951	9.7764954	9.7716749	
	18	68 3 24.5	31 26.37	+33.6	+0 36 42.6	+57.50	0.1818892	9.7672195	9.7631633	
	22	70 8 44.3	31 13.57	36.6	0 40 30.4	56.34	0.1833745	9.7595429	9.7563918	
	26	72 13 13.2	31 0.93	39.3	0 44 13.3	55.12	0.1848490	9.7537447	9.7516340	
	30	74 16 52.1	30 48.50	41.9	0 47 51.4	53.87	0.1863108	9.7500912	9.7491411	
	Dec.	4	76 19 41.7	30 36.27	44.2	0 51 24.3	52.56	0.1877584	9.7488054	9.7490993
8		78 21 42.7	30 24.27	+46.4	+0 54 51.9	+51.22	0.1891902	9.7500318	9.7516027	
	12	80 22 56.2	30 12.52	48.1	0 58 14.1	49.84	0.1906044	9.7538073	9.7566325	
	16	82 23 23.1	30 0.95	49.7	1 1 30.6	48.41	0.1919996	9.7600626	9.7640730	
	20	84 23 4.1	29 49.61	51.0	1 4 41.4	46.96	0.1933743	9.7686407	9.7737355	
	24	86 22 0.3	29 38.56	52.1	1 7 46.3	45.49	0.1947273	9.7793265	9.7853822	
	28	88 20 12.9	29 27.80	+53.0	+1 10 45.3	+43.99	0.1960572	9.7918678	9.7987482	
	32	90 17 43.0	29 17.26	+53.5	+1 13 38.2	+42.44	0.1973627	9.8050871		

JUPITER.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan.	3 122 25 32.1	4 50.37	+19.5	+0 30 48.4	+6.10	0.7224475	0.6399923	0.6388048
	7 122 44 53.3	4 50.22	19.8	0 31 12.8	6.08	0.7225613	0.6377302	0.6367718
	11 123 4 13.9	4 50.07	20.0	0 31 37.1	6.06	0.7226748	0.6359322	0.6352141
	15 123 23 33.9	4 49.92	20.2	0 32 1.3	6.05	0.7227881	0.6346202	0.6341524
	19 123 42 53.3	4 49.77	20.4	0 32 25.4	6.03	0.7229011	0.6338116	0.6335986
	23 124 2 12.0	4 49.62	+20.6	+0 32 49.5	+6.01	0.7230138	0.6335139	0.6335579
	27 124 21 30.2	4 49.47	20.8	0 33 13.5	5.99	0.7231263	0.6337299	0.6340291
	31 124 40 47.8	4 49.31	21.0	0 33 37.5	5.97	0.7232385	0.6344547	0.6350057
	Feb. 4 125 0 4.7	4 49.17	21.2	0 34 1.3	5.96	0.7233505	0.6356809	0.6364785
	8 125 19 21.1	4 49.02	21.4	0 34 25.1	5.94	0.7234622	0.6373965	0.6384328
Feb.	12 125 38 36.9	4 48.87	+21.5	+0 34 48.8	+5.92	0.7235736	0.6395846	0.6408492
	16 125 57 52.1	4 48.73	21.7	0 35 12.4	5.90	0.7236847	0.6422227	0.6437018
	20 126 17 6.7	4 48.58	21.9	0 35 36.0	5.88	0.7237955	0.6452821	0.6469599
	24 126 36 20.8	4 48.43	22.1	0 35 59.4	5.86	0.7239060	0.6487304	0.6505890
	28 126 55 34.2	4 48.29	22.3	0 36 22.8	5.84	0.7240162	0.6525316	0.6545543
	Mar. 3 127 14 47.1	4 48.15	+22.4	+0 36 46.1	+5.82	0.7241261	0.6566525	0.6588219
	7 127 33 59.3	4 47.99	22.6	0 37 9.4	5.80	0.7242356	0.6610583	0.6633575
	11 127 53 11.0	4 47.85	22.8	0 37 32.5	5.78	0.7243449	0.6657149	0.6681257
Mar.	15 128 12 22.1	4 47.71	22.9	0 37 55.6	5.75	0.7244537	0.6705856	0.6730896
	19 128 31 32.7	4 47.56	23.1	0 38 18.5	5.73	0.7245622	0.6756333	0.6782120
	23 128 50 42.6	4 47.42	+23.3	+0 38 41.4	+5.71	0.7246703	0.6808217	0.6834578
	27 129 9 52.1	4 47.28	23.4	0 39 4.2	5.69	0.7247782	0.6861167	0.6887944
	31 129 29 0.9	4 47.14	23.6	0 39 27.0	5.67	0.7248856	0.6914875	0.6941925
	Apr. 4 129 48 9.2	4 47.00	23.7	0 39 49.6	5.65	0.7249928	0.6969063	0.6996256
	8 130 7 16.9	4 46.86	23.9	0 40 12.2	5.63	0.7250996	0.7023473	0.7050683
	12 130 26 24.0	4 46.72	+24.0	+0 40 34.6	+5.61	0.7252061	0.7077853	0.7104948
Apr.	16 130 45 30.6	4 46.58	24.2	0 40 57.0	5.59	0.7253123	0.7131940	0.7158800
	20 131 4 36.7	4 46.44	24.3	0 41 19.3	5.56	0.7254181	0.7185504	0.7212028
	24 131 23 42.1	4 46.30	24.4	0 41 41.5	5.54	0.7255237	0.7238351	0.7264449
	28 131 42 47.1	4 46.17	24.6	0 42 3.6	5.52	0.7256289	0.7290305	0.7315901
	May 2 132 1 51.5	4 46.03	+24.7	+0 42 25.7	+5.50	0.7257338	0.7341221	0.7366251
	6 132 20 55.3	4 45.89	24.8	0 42 47.6	5.47	0.7258383	0.7390972	0.7415368
	10 132 39 58.6	4 45.76	24.9	0 43 9.5	5.45	0.7259425	0.7439422	0.7463118
	14 132 59 1.4	4 45.62	25.0	0 43 31.2	5.43	0.7260463	0.7486441	0.7509376
May	18 133 18 3.6	4 45.48	25.1	0 43 52.9	5.41	0.7261498	0.7531912	0.7554036
	22 133 37 5.3	4 45.35	+25.2	+0 44 14.5	+5.39	0.7262529	0.7575740	0.7597017
	26 133 56 6.4	4 45.21	25.3	0 44 36.0	5.36	0.7263557	0.7617858	0.7638256
	30 134 15 7.0	4 45.08	25.5	0 44 57.4	5.34	0.7264581	0.7658204	0.7677697
	June 3 134 34 7.0	4 44.94	25.6	0 45 18.7	5.32	0.7265601	0.7696728	0.7715289
	7 134 53 6.5	4 44.81	25.7	0 45 39.9	5.29	0.7266618	0.7733373	0.7750971
	11 135 12 5.5	4 44.68	+25.8	+0 46 1.1	+5.27	0.7267630	0.7768075	0.7784677
	15 135 31 3.9	4 44.55	25.9	0 46 22.1	5.25	0.7268639	0.7800774	0.7816361
June	19 135 50 1.9	4 44.42	26.0	0 46 43.0	5.22	0.7269644	0.7831435	0.7845994
	23 136 8 59.3	4 44.29	26.0	0 47 3.9	5.20	0.7270645	0.7860035	0.7873557
	27 136 27 56.2	4 44.16	26.1	0 47 24.6	5.17	0.7271643	0.7886558	0.7899037
	July 1 136 46 52.5	4 44.03	+26.2	+0 47 45.3	+5.15	0.7272637	0.7910990	0.7922413
	5 137 5 48.4	4 43.90	+26.3	+0 48 5.8	+5.13	0.7273627	0.7933302	0.7943652

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
July	1	136 46 52.5	4 44.03	+26.2	+0 47 45.3	+5.15	0.7272637	0.7910990
	5	137 5 48.4	4 43.90	26.3	0 48 5.8	5.13	0.7273627	0.7933302
	9	137 24 43.7	4 43.77	26.4	0 48 26.3	5.10	0.7274613	0.7953460
	13	137 43 38.5	4 43.65	26.4	0 48 46.7	5.08	0.7275596	0.7971440
	17	138 2 32.9	4 43.52	26.5	0 49 6.9	5.05	0.7276574	0.7987222
	21	138 21 26.7	4 43.40	+26.5	+0 49 27.1	+5.03	0.7277548	0.8000799
	25	138 40 20.1	4 43.27	26.6	0 49 47.1	5.00	0.7278519	0.8012176
	29	138 59 12.9	4 43.15	26.6	0 50 7.1	4.98	0.7279485	0.8021349
	Aug. 2	139 18 5.3	4 43.02	26.7	0 50 27.0	4.95	0.7280447	0.8028314
	6	139 36 57.1	4 42.90	26.7	0 50 46.7	4.93	0.7281404	0.8033039
	10	139 55 48.4	4 42.77	+26.8	+0 51 6.4	+4.90	0.7282358	0.8035510
	14	140 14 39.3	4 42.65	26.8	0 51 25.9	4.88	0.7283308	0.8035720
	18	140 33 29.7	4 42.52	26.9	0 51 45.4	4.85	0.7284253	0.8033675
	22	140 52 19.5	4 42.40	26.9	0 52 4.8	4.83	0.7285194	0.8029382
	26	141 11 8.9	4 42.28	27.0	0 52 24.0	4.80	0.7286130	0.8022852
	30	141 29 57.7	4 42.16	+27.0	+0 52 43.2	+4.78	0.7287062	0.8014077
	Sept. 3	141 48 46.2	4 42.05	27.0	0 53 2.2	4.75	0.7287989	0.8003048
	7	142 7 34.1	4 41.93	27.0	0 53 21.2	4.72	0.7288912	0.7989754
	11	142 26 21.6	4 41.81	27.0	0 53 40.0	4.70	0.7289830	0.7974199
	15	142 45 8.6	4 41.69	27.1	0 53 58.7	4.67	0.7290744	0.7956403
	19	143 3 55.1	4 41.57	+27.1	+0 54 17.4	+4.65	0.7291653	0.7936390
	23	143 22 41.2	4 41.45	27.1	0 54 35.9	4.62	0.7292558	0.7914184
	27	143 41 26.8	4 41.34	27.1	0 54 54.3	4.59	0.7293459	0.7889792
	Oct. 1	144 0 11.9	4 41.22	27.1	0 55 12.7	4.57	0.7294355	0.7863225
	5	144 18 56.6	4 41.11	27.1	0 55 30.9	4.54	0.7295246	0.7834497
	9	144 37 40.8	4 41.00	+27.1	+0 55 49.0	+4.51	0.7296132	0.7803637
	13	144 56 24.6	4 40.89	27.1	0 56 7.0	4.49	0.7297014	0.7770694
	17	145 15 7.9	4 40.78	27.1	0 56 24.9	4.46	0.7297891	0.7735725
	21	145 33 50.8	4 40.66	27.1	0 56 42.7	4.43	0.7298764	0.7698790
	25	145 52 33.2	4 40.55	27.1	0 57 0.3	4.41	0.7299632	0.7659943
	29	146 11 15.2	4 40.44	+27.1	+0 57 17.9	+4.38	0.7300496	0.7619236
	Nov. 2	146 29 56.7	4 40.33	27.1	0 57 35.4	4.35	0.7301355	0.7576735
	6	146 48 37.8	4 40.22	27.1	0 57 52.7	4.33	0.7302209	0.7532529
	10	147 7 18.4	4 40.11	27.1	0 58 10.0	4.30	0.7303060	0.7486734
	14	147 25 58.7	4 40.00	27.0	0 58 27.1	4.27	0.7303906	0.7439482
	18	147 44 38.5	4 39.90	+27.0	+0 58 44.1	+4.24	0.7304747	0.7390908
	22	148 3 17.9	4 39.79	27.0	0 59 1.1	4.22	0.7305583	0.7341149
	26	148 21 56.8	4 39.69	27.0	0 59 17.9	4.19	0.7306415	0.7290351
	30	148 40 35.4	4 39.58	26.9	0 59 34.6	4.16	0.7307242	0.7238679
	Dec. 4	148 59 13.5	4 39.48	26.9	0 59 51.1	4.13	0.7308064	0.7186633
	8	149 17 51.2	4 39.37	+26.8	+1 0 7.6	+4.10	0.7308881	0.7133544
	12	149 36 28.5	4 39.27	26.8	1 0 24.0	4.08	0.7309693	0.7080572
	16	149 55 5.3	4 39.16	26.7	1 0 40.2	4.05	0.7310501	0.7027669
	20	150 13 41.7	4 39.06	26.6	1 0 56.4	4.02	0.7311303	0.6975109
	24	150 32 17.8	4 38.96	26.6	1 1 12.4	3.99	0.7312099	0.6923160
	28	150 50 53.4	4 38.86	+26.5	+1 1 28.3	+3.96	0.7312891	0.6872130
	32	151 9 28.7	4 38.76	+26.4	+1 1 44.1	+3.93	0.7313678	0.6822350

SATURN.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. 3	221 56 46.9	1 52.80	-1 0.6	+2 21 11.4	-1.61	0.9939788	1.0161230	1.0149542
7	222 4 18.1	1 52.78	1 1.0	2 21 5.0	1.62	0.9940202	1.0137577	1.0125344
11	222 11 49.1	1 52.76	1 1.3	2 20 58.4	1.64	0.9940616	1.0112852	1.0100112
15	222 19 20.2	1 52.74	1 1.6	2 20 51.8	1.65	0.9941029	1.0087140	1.0073950
19	222 26 51.1	1 52.72	1 1.8	2 20 45.2	1.66	0.9941441	1.0060552	1.0046956
23	222 34 22.0	1 52.70	-1 2.1	+2 20 38.5	-1.67	0.9941852	1.0033179	1.0019238
27	222 41 52.7	1 52.68	1 2.4	2 20 31.8	1.68	0.9942262	1.0005144	0.9990910
31	222 49 23.4	1 52.66	1 2.7	2 20 25.0	1.69	0.9942671	0.9976552	0.9962083
Feb. 4	222 56 53.9	1 52.64	1 3.0	2 20 18.3	1.70	0.9943079	0.9947517	0.9932869
8	223 4 24.4	1 52.61	1 3.3	2 20 11.5	1.71	0.9943486	0.9918156	0.9903395
12	223 11 54.8	1 52.59	-1 3.6	+2 20 4.6	-1.72	0.9943893	0.9888603	0.9873799
16	223 19 25.2	1 52.57	1 3.9	2 19 57.7	1.73	0.9944299	0.9859002	0.9844233
20	223 26 55.4	1 52.55	1 4.2	2 19 50.8	1.74	0.9944704	0.9829511	0.9814854
24	223 34 25.6	1 52.53	1 4.5	2 19 43.8	1.75	0.9945108	0.9800280	0.9785808
28	223 41 55.7	1 52.51	1 4.8	2 19 36.8	1.76	0.9945512	0.9771456	0.9757242
Mar. 3	223 49 25.7	1 52.49	-1 5.1	+2 19 29.7	-1.77	0.9945915	0.9743186	0.9729305
7	223 56 55.6	1 52.47	1 5.4	2 19 22.6	1.78	0.9946317	0.9715619	0.9702149
11	224 4 25.5	1 52.45	1 5.7	2 19 15.5	1.78	0.9946718	0.9688915	0.9675939
15	224 11 55.3	1 52.43	1 6.0	2 19 8.4	1.79	0.9947117	0.9663241	0.9650841
19	224 19 25.0	1 52.41	1 6.3	2 19 1.2	1.80	0.9947516	0.9638760	0.9627018
23	224 26 54.6	1 52.39	-1 6.6	+2 18 54.0	-1.81	0.9947915	0.9615631	0.9604618
27	224 34 24.1	1 52.37	1 6.9	2 18 46.7	1.82	0.9948313	0.9593994	0.9583776
31	224 41 53.5	1 52.35	1 7.3	2 18 39.4	1.83	0.9948710	0.9573980	0.9564623
Apr. 4	224 49 22.9	1 52.33	1 7.6	2 18 32.1	1.84	0.9949107	0.9555719	0.9547284
8	224 56 52.2	1 52.31	1 7.9	2 18 24.7	1.85	0.9949503	0.9539333	0.9531884
12	225 4 21.4	1 52.29	-1 8.2	+2 18 17.3	-1.86	0.9949898	0.9524948	0.9518538
16	225 11 50.5	1 52.27	1 8.5	2 18 9.9	1.87	0.9950292	0.9512665	0.9507343
20	225 19 19.5	1 52.25	1 8.8	2 18 2.4	1.87	0.9950685	0.9502578	0.9498378
24	225 26 48.4	1 52.23	1 9.1	2 17 54.9	1.88	0.9951077	0.9494746	0.9491689
28	225 34 17.3	1 52.21	1 9.4	2 17 47.4	1.89	0.9951468	0.9489211	0.9487316
May 2	225 41 46.1	1 52.19	-1 9.7	+2 17 39.9	-1.90	0.9951858	0.9486007	0.9485288
6	225 49 14.8	1 52.17	1 10.0	2 17 32.3	1.91	0.9952248	0.9485160	0.9485624
10	225 56 43.5	1 52.15	1 10.3	2 17 24.6	1.92	0.9952637	0.9486679	0.9488326
14	226 4 12.0	1 52.13	1 10.6	2 17 16.9	1.93	0.9953024	0.9490559	0.9493374
18	226 11 40.5	1 52.11	1 10.9	2 17 9.2	1.94	0.9953411	0.9496764	0.9500722
22	226 19 8.9	1 52.09	-1 11.2	+2 17 1.4	-1.95	0.9953798	0.9505237	0.9510300
26	226 26 37.3	1 52.07	1 11.5	2 16 53.6	1.96	0.9954184	0.9515900	0.9522029
30	226 34 5.5	1 52.05	1 11.8	2 16 45.7	1.96	0.9954569	0.9528674	0.9535826
June 3	226 41 33.7	1 52.03	1 12.1	2 16 37.9	1.97	0.9954953	0.9543471	0.9551597
7	226 49 1.8	1 52.01	1 12.3	2 16 30.0	1.98	0.9955336	0.9560194	0.9569247
11	226 56 29.8	1 51.99	-1 12.6	+2 16 22.0	-1.99	0.9955719	0.9578738	0.9588653
15	227 3 57.7	1 51.97	1 12.9	2 16 14.0	2.00	0.9956101	0.9598973	0.9609680
19	227 11 25.6	1 51.95	1 13.2	2 16 6.0	2.01	0.9956482	0.9620756	0.9632183
23	227 18 53.4	1 51.94	1 13.5	2 15 57.9	2.02	0.9956862	0.9643943	0.9656017
27	227 26 21.1	1 51.92	1 13.7	2 15 49.8	2.03	0.9957241	0.9668388	0.9681040
July 1	227 33 48.8	1 51.90	-1 14.0	+2 15 41.7	-2.04	0.9957619	0.9693955	0.9707117
5	227 41 16.3	1 51.88	-1 14.3	+2 15 33.5	-2.05	0.9957996	0.9720508	

SATURN.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
July	1 227 33 48.8	1 51.90	-1 14.0	+2 15 41.7	-2.04	0.9957619	0.9693955	0.9707117
	5 227 41 16.3	1 51.88	1 14.3	2 15 33.5	2.05	0.9957996	0.9720508	0.9734110
	9 227 48 43.8	1 51.86	1 14.6	2 15 25.3	2.06	0.9958372	0.9747903	0.9761869
	13 227 56 11.3	1 51.84	1 14.9	2 15 17.0	2.07	0.9958747	0.9775989	0.9790244
	17 228 3 38.6	1 51.82	1 15.1	2 15 8.7	2.08	0.9959121	0.9804615	0.9819083
	21 228 11 5.9	1 51.81	-1 15.4	+2 15 0.4	-2.08	0.9959495	0.9833631	0.9848242
	25 228 18 33.0	1 51.79	1 15.7	2 14 52.0	2.09	0.9959868	0.9862899	0.9877587
	29 228 26 0.1	1 51.77	1 15.9	2 14 43.6	2.10	0.9960240	0.9892291	0.9906996
	Aug. 2 228 33 27.2	1 51.75	1 16.2	2 14 35.2	2.11	0.9960611	0.9921687	0.9936349
	6 228 40 54.2	1 51.73	1 16.4	2 14 26.8	2.12	0.9960982	0.9950966	0.9965521
	10 228 48 21.1	1 51.71	-1 16.7	+2 14 18.3	-2.13	0.9961352	0.9980000	0.9994387
	14 228 55 47.9	1 51.69	1 17.0	2 14 9.7	2.14	0.9961721	1.0008668	1.0022827
	18 229 3 14.6	1 51.67	1 17.2	2 14 1.1	2.15	0.9962089	1.0036852	1.0050731
	22 229 10 41.3	1 51.65	1 17.5	2 13 52.5	2.16	0.9962456	1.0064452	1.0078004
	26 229 18 7.9	1 51.64	1 17.7	2 13 43.9	2.16	0.9962821	1.0091377	1.0104560
	30 229 25 34.4	1 51.62	-1 17.9	+2 13 35.2	-2.17	0.9963186	1.0117543	1.0130314
	Sept. 3 229 33 0.8	1 51.60	1 18.2	2 13 26.5	2.18	0.9963550	1.0142863	1.0155179
	7 229 40 27.2	1 51.58	1 18.5	2 13 17.7	2.19	0.9963914	1.0167251	1.0179069
	11 229 47 53.5	1 51.56	1 18.7	2 13 8.9	2.20	0.9964277	1.0190622	1.0201900
	15 229 55 19.7	1 51.55	1 19.0	2 13 0.1	2.21	0.9964639	1.0212896	1.0223601
	19 230 2 45.9	1 51.53	-1 19.2	+2 12 51.2	-2.22	0.9965000	1.0234010	1.0244115
	23 230 10 12.0	1 51.51	1 19.5	2 12 42.3	2.23	0.9965360	1.0253911	1.0263390
	27 230 17 38.0	1 51.49	1 19.7	2 12 33.4	2.24	0.9965719	1.0272547	1.0281374
	Oct. 1 230 25 3.9	1 51.47	1 20.0	2 12 24.4	2.24	0.9966077	1.0289866	1.0298016
	5 230 32 29.8	1 51.46	1 20.2	2 12 15.4	2.25	0.9966433	1.0305817	1.0313259
	9 230 39 55.6	1 51.44	-1 20.5	+2 12 6.4	-2.26	0.9966789	1.0320340	1.0327053
	13 230 47 21.3	1 51.42	1 20.7	2 11 57.3	2.27	0.9967144	1.0333396	1.0339363
	17 230 54 46.9	1 51.40	1 21.0	2 11 48.2	2.28	0.9967499	1.0344951	1.0350158
	21 231 2 12.5	1 51.38	1 21.2	2 11 39.1	2.29	0.9967853	1.0354982	1.0359418
	25 231 9 38.0	1 51.37	1 21.4	2 11 29.9	2.30	0.9968206	1.0363465	1.0367121
	29 231 17 3.5	1 51.35	-1 21.7	+2 11 20.7	-2.31	0.9968558	1.0370379	1.0373237
	Nov. 2 231 24 28.8	1 51.33	1 21.9	2 11 11.4	2.32	0.9968909	1.0375692	1.0377741
	6 231 31 54.1	1 51.31	1 22.1	2 11 2.1	2.33	0.9969259	1.0379383	1.0380615
	10 231 39 19.4	1 51.30	1 22.3	2 10 52.8	2.34	0.9969608	1.0381436	1.0381845
	14 231 46 44.5	1 51.28	1 22.5	2 10 43.4	2.35	0.9969955	1.0381843	1.0381432
	18 231 54 9.6	1 51.26	-1 22.8	+2 10 34.0	-2.35	0.9970302	1.0380612	1.0379384
	22 232 1 34.6	1 51.25	1 23.0	2 10 24.6	2.36	0.9970648	1.0377748	1.0375702
	26 232 8 59.5	1 51.23	1 23.2	2 10 15.1	2.37	0.9970994	1.0373249	1.0370392
	30 232 16 24.4	1 51.21	1 23.4	2 10 5.6	2.38	0.9971340	1.0367128	1.0363457
	Dec. 4 232 23 49.2	1 51.19	1 23.6	2 9 56.1	2.39	0.9971685	1.0359380	1.0354899
	8 232 31 13.9	1 51.18	-1 23.9	+2 9 46.5	-2.40	0.9972029	1.0350017	1.0344739
	12 232 38 38.6	1 51.16	1 24.1	2 9 36.9	2.41	0.9972371	1.0339069	1.0333014
	16 232 46 3.2	1 51.14	1 24.3	2 9 27.3	2.42	0.9972712	1.0326576	1.0319758
	20 232 53 27.7	1 51.12	1 24.5	2 9 17.6	2.42	0.9973052	1.0312566	1.0305007
	24 233 0 52.2	1 51.11	1 24.7	2 9 7.9	2.43	0.9973391	1.0297083	1.0288797
28	233 8 16.6	1 51.09	-1 24.9	+2 8 58.2	-2.44	0.9973729	1.0280156	1.0271163

URANUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
	°	'	"			°	'	"			At Date.	At Intermediate Date.
Jan. 7	230	55	52.2	44.40	-6.6	+0	17	49.4	-0.55	1.2725892	1.2855985	1.2843348
15	231	1	47.4	44.40	6.6	0	17	45.0	0.55	1.2726207	1.2830103	1.2816306
23	231	7	42.6	44.39	6.6	0	17	40.6	0.55	1.2726522	1.2802021	1.2787317
31	231	13	37.7	44.38	6.6	0	17	36.1	0.55	1.2726837	1.2772252	1.2756890
Feb. 8	231	19	32.8	44.38	6.6	0	17	31.7	0.55	1.2727153	1.2741301	1.2725553
16	231	25	27.8	44.37	-6.5	+0	17	27.3	-0.55	1.2727469	1.2709726	1.2693902
24	231	31	22.8	44.37	6.5	0	17	22.9	0.55	1.2727786	1.2678161	1.2662578
Mar. 3	231	37	17.7	44.36	6.5	0	17	18.4	0.55	1.2728103	1.2647228	1.2632185
11	231	43	12.6	44.36	6.5	0	17	14.0	0.55	1.2728420	1.2617529	1.2603341
19	231	49	7.5	44.35	6.4	0	17	9.6	0.55	1.2728737	1.2589700	1.2576684
27	231	55	2.3	44.35	-6.4	+0	17	5.1	-0.55	1.2729055	1.2564361	1.2552793
Apr. 4	232	0	57.0	44.34	6.4	0	17	0.7	0.55	1.2729373	1.2542043	1.2532171
12	232	6	51.7	44.34	6.4	0	16	56.3	0.56	1.2729691	1.2523234	1.2515291
20	232	12	46.4	44.33	6.3	0	16	51.8	0.56	1.2730009	1.2508387	1.2502554
28	232	18	41.0	44.33	6.3	0	16	47.4	0.56	1.2730328	1.2497824	1.2494218
May 6	232	24	35.6	44.32	-6.3	+0	16	42.9	-0.56	1.2730647	1.2491758	1.2490458
14	232	30	30.1	44.31	6.3	0	16	38.4	0.56	1.2730967	1.2490335	1.2491382
22	232	36	24.6	44.31	6.2	0	16	34.0	0.56	1.2731287	1.2493585	1.2496927
30	232	42	19.0	44.30	6.2	0	16	29.6	0.56	1.2731607	1.2501386	1.2506935
June 7	232	48	13.4	44.29	6.2	0	16	25.1	0.56	1.2731927	1.2513544	1.2521181
15	232	54	7.8	44.29	-6.2	+0	16	20.7	-0.56	1.2732248	1.2529797	1.2539340
23	233	0	2.1	44.28	6.1	0	16	16.2	0.56	1.2732568	1.2549749	1.2560966
July 1	233	5	56.3	44.28	6.1	0	16	11.7	0.56	1.2732889	1.2572934	1.2585594
9	233	11	50.5	44.27	6.1	0	16	7.3	0.56	1.2733211	1.2598882	1.2612729
17	233	17	44.7	44.27	6.1	0	16	2.8	0.56	1.2733532	1.2627057	1.2641791
25	233	23	38.8	44.26	-6.0	+0	15	58.3	-0.56	1.2733854	1.2656863	1.2672200
Aug. 2	233	29	32.9	44.26	6.0	0	15	53.9	0.56	1.2734176	1.2687737	1.2703403
10	233	35	26.9	44.25	6.0	0	15	49.4	0.56	1.2734498	1.2719129	1.2734833
18	233	41	20.9	44.24	6.0	0	15	44.9	0.56	1.2734820	1.2750450	1.2765909
26	233	47	14.9	44.24	5.9	0	15	40.4	0.56	1.2735143	1.2781152	1.2796116
Sept. 3	233	53	8.8	44.23	-5.9	+0	15	36.0	-0.56	1.2735465	1.2810745	1.2824976
11	233	59	2.6	44.23	5.9	0	15	31.5	0.56	1.2735788	1.2838747	1.2852001
19	234	4	56.4	44.22	5.9	0	15	27.0	0.56	1.2736111	1.2864686	1.2876758
27	234	10	50.2	44.22	5.8	0	15	22.5	0.56	1.2736434	1.2888177	1.2898899
Oct. 5	234	16	43.9	44.21	5.8	0	15	18.0	0.56	1.2736757	1.2908879	1.2918078
13	234	22	37.6	44.20	-5.8	+0	15	13.5	-0.56	1.2737080	1.2926455	1.2933983
21	234	28	31.2	44.20	5.8	0	15	9.0	0.56	1.2737404	1.2940633	1.2946390
29	234	34	24.8	44.19	5.7	0	15	4.5	0.56	1.2737728	1.2951227	1.2955123
Nov. 6	234	40	18.3	44.19	5.7	0	15	0.0	0.56	1.2738052	1.2958059	1.2960018
14	234	46	11.8	44.18	5.7	0	14	55.5	0.56	1.2738376	1.2960996	1.2960991
22	234	52	5.2	44.17	-5.7	+0	14	51.0	-0.56	1.2738700	1.2960005	1.2958039
30	234	57	58.6	44.17	5.6	0	14	46.5	0.56	1.2739025	1.2955094	1.2951176
8	235	3	52.0	44.16	5.6	0	14	42.0	0.56	1.2739350	1.2946293	1.2940468
16	235	9	45.3	44.16	5.6	0	14	37.5	0.56	1.2739675	1.2933723	1.2926085
24	235	15	38.5	44.15	5.6	0	14	33.0	0.56	1.2740000	1.2917585	1.2908246
31	235	21	31.7	44.15	-5.5	+0	14	28.4	-0.56	1.2740325	1.2898097	
27	235	27	24.9	44.14	-5.5	+0	14	23.9	0.56	1.2740651		

NEPTUNE.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
	°	'	"			°	'	"			At Date.	At Intermediate Date.
Jan. 7	76	49	28.6	22.01	-47.4	-1	26	10.7	+0.40	1.4750353	1.4625242	1.4630884
15	76	52	24.7	22.01	47.5	1	26	7.4	0.40	1.4750364	1.4637135	1.4643951
23	76	55	20.8	22.01	47.5	1	26	4.2	0.40	1.4750375	1.4651290	1.4659109
31	76	58	16.9	22.01	47.5	1	26	1.0	0.40	1.4750386	1.4667363	1.4676010
Feb. 8	77	1	12.9	22.01	47.5	1	25	57.8	0.40	1.4750397	1.4685002	1.4694297
16	77	4	9.0	22.00	-47.5	-1	25	54.6	+0.40	1.4750408	1.4703840	1.4713580
24	77	7	5.0	22.00	47.6	1	25	51.3	0.40	1.4750419	1.4723465	1.4733442
Mar. 3	77	10	1.1	22.00	47.6	1	25	48.1	0.40	1.4750429	1.4743467	1.4753492
11	77	12	57.1	22.00	47.6	1	25	44.9	0.41	1.4750440	1.4763471	1.4773356
19	77	15	53.2	22.00	47.6	1	25	41.6	0.41	1.4750451	1.4783100	1.4792655
27	77	18	49.2	22.00	-47.7	-1	25	38.4	+0.41	1.4750462	1.4801982	1.4811041
Apr. 4	77	21	45.2	22.00	47.7	1	25	35.1	0.41	1.4750473	1.4819797	1.4828215
12	77	24	41.3	22.00	47.7	1	25	31.9	0.41	1.4750483	1.4836260	1.4843894
20	77	27	37.3	22.00	47.7	1	25	28.6	0.41	1.4750494	1.4851092	1.4857823
28	77	30	33.3	22.00	47.8	1	25	25.3	0.41	1.4750505	1.4864067	1.4869799
May 6	77	33	29.3	22.00	-47.8	-1	25	22.1	+0.41	1.4750516	1.4875002	1.4879655
14	77	36	25.3	22.00	47.8	1	25	18.8	0.41	1.4750526	1.4883743	1.4887243
22	77	39	21.3	22.00	47.8	1	25	15.5	0.41	1.4750537	1.4890152	1.4892461
30	77	42	17.3	22.00	47.9	1	25	12.2	0.41	1.4750548	1.4894165	1.4895257
June 7	77	45	13.3	22.00	47.9	1	25	9.0	0.41	1.4750558	1.4895733	1.4895585
15	77	48	9.3	22.00	-47.9	-1	25	5.7	+0.41	1.4750569	1.4894822	1.4893446
23	77	51	5.3	22.00	47.9	1	25	2.4	0.41	1.4750580	1.4891467	1.4888890
July 1	77	54	1.3	22.00	47.9	1	24	59.1	0.41	1.4750590	1.4885725	1.4881979
9	77	56	57.2	22.00	48.0	1	24	55.8	0.41	1.4750601	1.4877670	1.4872808
17	77	59	53.2	21.99	48.0	1	24	52.5	0.41	1.4750611	1.4867417	1.4861517
25	78	2	49.2	21.99	-48.0	-1	24	49.2	+0.41	1.4750621	1.4855130	1.4848276
Aug. 2	78	5	45.1	21.99	48.0	1	24	45.9	0.41	1.4750632	1.4840983	1.4833275
10	78	8	41.1	21.99	48.0	1	24	42.6	0.41	1.4750642	1.4825186	1.4816745
18	78	11	37.0	21.99	48.1	1	24	39.2	0.41	1.4750653	1.4807989	1.4798953
26	78	14	33.0	21.99	48.1	1	24	36.0	0.41	1.4750663	1.4789676	1.4780194
Sept. 3	78	17	28.9	21.99	-48.1	-1	24	32.7	+0.42	1.4750674	1.4770546	1.4760766
11	78	20	24.8	21.99	48.1	1	24	29.3	0.42	1.4750684	1.4750907	1.4741019
19	78	23	20.7	21.99	48.1	1	24	26.0	0.42	1.4750694	1.4731145	1.4721330
27	78	26	16.7	21.99	48.2	1	24	22.7	0.42	1.4750705	1.4711619	1.4702055
Oct. 5	78	29	12.6	21.99	48.2	1	24	19.3	0.42	1.4750715	1.4692689	1.4683571
13	78	32	8.5	21.99	-48.2	-1	24	16.0	+0.42	1.4750726	1.4674751	1.4666278
21	78	35	4.4	21.99	48.2	1	24	12.7	0.42	1.4750736	1.4658190	1.4650534
29	78	38	0.3	21.99	48.2	1	24	9.3	0.42	1.4750746	1.4643351	1.4636682
Nov. 6	78	40	56.2	21.99	48.3	1	24	6.0	0.42	1.4750757	1.4630567	1.4625047
14	78	43	52.1	21.99	48.3	1	24	2.6	0.42	1.4750767	1.4620155	1.4615918
22	78	46	48.0	21.99	-48.3	-1	23	59.3	+0.42	1.4750777	1.4612356	1.4609496
30	78	49	43.9	21.98	48.3	1	23	55.9	0.42	1.4750788	1.4607355	1.4605949
Dec. 8	78	52	39.7	21.98	48.4	1	23	52.6	0.42	1.4750798	1.4605291	1.4605386
16	78	55	35.6	21.98	48.4	1	23	49.2	0.42	1.4750808	1.4606230	1.4607819
24	78	58	31.5	21.98	48.4	1	23	45.8	0.42	1.4750818	1.4610143	1.4613190
32	79	1	27.3	21.98	-48.4	-1	23	42.5	+0.42	1.4750828	1.4616941	
40	79	4	23.2	21.98	-48.4	-1	23	39.1	+0.42	1.4750839		

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Jan. 0	+0.1642482	+0.1728616	-328	-0.8893099	-0.8879318	-200	-0.3858483	-0.3852506	+320
1	0.1814617	0.1900477	337	0.8864848	0.8849693	206	0.3846230	0.3839658	315
2	0.1986189	0.2071750	345	0.8833852	0.8817327	213	0.3832788	0.3825621	311
3	0.2157153	0.2242390	353	0.8800118	0.8782228	220	0.3818158	0.3810399	307
4	0.2327456	0.2412344	360	0.8763656	0.8744405	227	0.3802345	0.3793996	303
5	+0.2497049	+0.2581564	-367	-0.8724474	-0.8703863	-235	-0.3785353	-0.3776414	+298
6	0.2665882	0.2749997	374	0.8682575	0.8660612	242	0.3767181	0.3757655	293
7	0.2833903	0.2917591	380	0.8637975	0.8614666	250	0.3747836	0.3737726	288
8	0.3001057	0.3084294	387	0.8590685	0.8566035	258	0.3727324	0.3716632	283
9	0.3167295	0.3250052	393	0.8540717	0.8514729	266	0.3705649	0.3694375	277
10	+0.3332559	+0.3414808	-399	-0.8488076	-0.8460764	-274	-0.3682813	-0.3670964	+271
11	0.3496793	0.3578508	405	0.8432792	0.8404158	283	0.3658827	0.3646402	265
12	0.3659946	0.3741102	411	0.8374867	0.8344923	292	0.3633693	0.3620701	259
13	0.3821968	0.3902536	416	0.8314326	0.8283077	301	0.3607425	0.3593866	253
14	0.3982800	0.4062753	421	0.8251181	0.8218641	310	0.3580025	0.3565905	247
15	+0.4142389	+0.4221702	-426	-0.8185459	-0.8151635	-319	-0.3551506	-0.3536828	+240
16	0.4300685	0.4379328	430	0.8117175	0.8082084	328	0.3521873	0.3506645	233
17	0.4457628	0.4535580	434	0.8046363	0.8010012	338	0.3491144	0.3475369	226
18	0.4613177	0.4690413	438	0.7973037	0.7935446	347	0.3459323	0.3443010	219
19	0.4767280	0.4843770	441	0.7897238	0.7858413	357	0.3426429	0.3409581	212
20	+0.4919879	+0.4995606	-444	-0.7818976	-0.7778932	-367	-0.3392467	-0.3375090	+205
21	0.5070942	0.5145877	446	0.7738284	0.7697038	377	0.3357452	0.3339553	197
22	0.5220408	0.5294533	448	0.7655197	0.7612765	387	0.3321397	0.3302986	189
23	0.5368243	0.5441532	450	0.7569745	0.7526139	397	0.3284320	0.3265399	181
24	0.5514397	0.5586834	452	0.7481953	0.7437191	407	0.3246226	0.3226805	173
25	+0.5658836	+0.5730397	-453	-0.7391855	-0.7345948	-418	0.3207135	-0.3187218	+165
26	0.5801513	0.5872178	454	0.7299475	0.7252440	428	0.3167056	0.3146650	157
27	0.5942389	0.6012142	454	0.7204847	0.7156608	439	0.3126002	0.3105114	148
28	0.6081430	0.6150248	454	0.7108000	0.7058758	449	0.3083987	0.3062625	140
29	0.6218591	0.6286454	454	0.7008973	0.6958645	460	0.3041027	0.3019195	131
30	+0.6353833	+0.6420724	-453	-0.6907781	-0.6856388	-471	-0.2997130	-0.2974834	+123
31	0.6487122	0.6553024	452	0.6804467	0.6752020	481	0.2952310	0.2929559	114
Feb. 1	0.6618423	0.6683312	451	0.6699052	0.6645570	492	0.2906582	0.2883381	105
2	0.6747688	0.6811548	449	0.6591576	0.6537073	502	0.2859957	0.2836313	96
3	0.6874886	0.6937699	447	0.6482064	0.6426552	512	0.2812449	0.2788366	87
4	+0.6999981	+0.7061724	-444	-0.6370543	-0.6314044	-522	-0.2764067	-0.2739556	+ 78
5	0.7122925	0.7183582	441	0.6257057	0.6199583	532	0.2714833	0.2689809	69
6	0.7243688	0.7303238	437	0.6141628	0.6083195	542	0.2664755	0.2639403	60
7	0.7362227	0.7420653	433	0.6024291	0.5964923	552	0.2613846	0.2588088	51
8	0.7478509	0.7535786	429	0.5905093	0.5844803	562	0.2562130	0.2535970	41
9	+0.7592484	+0.7648601	-424	-0.5784059	-0.5722864	-572	-0.2509613	-0.2483063	+ 32
10	0.7704129	0.7759062	419	0.5661226	0.5599150	581	0.2456317	0.2429381	22
11	0.7813396	0.7867129	414	0.5536640	0.5473701	591	0.2402257	0.2374947	13
12	0.7920256	0.7972773	409	0.5410339	0.5346558	600	0.2347453	0.2319776	+ 3
13	0.8024674	0.8075954	403	0.5282364	0.5217760	609	0.2291920	0.2263887	- 7
14	+0.8126611	+0.8176640	-397	-0.5152754	-0.5087350	-618	-0.2235679	-0.2207298	- 17
15	+0.8226038	+0.8274802	-391	-0.5021555	-0.4955376	-627	-0.2178748	-0.2150032	- 27

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Feb. 15	+0.8226038	+0.8274802	-391	-0.5021555	-0.4955376	-627	-0.2178748	-0.2150032	-27
16	0.8322927	0.8370411	384	0.4888818	0.4821884	636	0.2121151	0.2092107	37
17	0.8417250	0.8463438	377	0.4754580	0.4686912	645	0.2062903	0.2033540	47
18	0.8508975	0.8553857	369	0.4618886	0.4550507	653	0.2004022	0.1974353	57
19	0.8598082	0.8641647	361	0.4481785	0.4412722	662	0.1944534	0.1914567	67
20	+0.8684548	+0.8726779	-353	-0.4343324	-0.4273597	-670	-0.1884456	-0.1854202	-77
21	0.8768340	0.8809230	345	0.4203546	0.4133179	679	0.1823809	0.1793279	87
22	0.8849447	0.8888987	336	0.4062500	0.3991514	687	0.1762613	0.1731814	97
23	0.8927848	0.8966030	327	0.3920225	0.3848639	695	0.1700885	0.1669828	107
24	0.9003529	0.9040342	317	0.3776763	0.3704605	703	0.1638645	0.1607339	117
25	+0.9076467	+0.9111902	-307	-0.3632169	-0.3559459	-711	-0.1575913	-0.1544369	-127
26	0.9146645	0.9180696	297	0.3486480	0.3413238	718	0.1512709	0.1480934	138
27	0.9214051	0.9246709	287	0.3339738	0.3265985	726	0.1449047	0.1417051	148
28	0.9278667	0.9309923	276	0.3191986	0.3117747	733	0.1384948	0.1352741	159
29	0.9340476	0.9370323	265	0.3043275	0.2968570	740	0.1320431	0.1288021	169
Mar. 1	+0.9399462	+0.9427890	-254	-0.2893639	-0.2818490	-747	-0.1255514	-0.1222911	-180
2	0.9455607	0.9482614	243	0.2743126	0.2667550	754	0.1190214	0.1157426	191
3	0.9508907	0.9534482	231	0.2591771	0.2515795	760	0.1124549	0.1091586	201
4	0.9559336	0.9583467	219	0.2439626	0.2363270	766	0.1058539	0.1025411	212
5	0.9606876	0.9629562	207	0.2286733	0.2210018	772	0.0992204	0.0958919	222
6	+0.9651522	+0.9672753	-195	-0.2133133	-0.2056085	-778	-0.0925559	-0.0892130	-232
7	0.9693253	0.9713022	182	0.1978878	0.1901517	783	0.0858631	0.0825064	242
8	0.9732058	0.9750360	169	0.1824009	0.1746359	788	0.0791433	0.0757740	252
9	0.9767924	0.9784747	155	0.1668574	0.1590663	793	0.0723988	0.0690181	261
10	0.9800831	0.9816177	141	0.1512629	0.1434472	798	0.0656320	0.0622407	271
11	+0.9830780	+0.9844637	-127	-0.1356203	-0.1277834	-802	-0.0588445	-0.0554438	-280
12	0.9857750	0.9870122	113	0.1199367	0.1120806	806	0.0520389	0.0486300	290
13	0.9881748	0.9892626	99	0.1042159	0.0963435	810	0.0452173	0.0418012	299
14	0.9902757	0.9912139	85	0.0884638	0.0805773	814	0.0383820	0.0349600	309
15	0.9920773	0.9928657	70	0.0726848	0.0647868	817	0.0315353	0.0281082	318
16	+0.9935793	+0.9942180	-55	-0.0568840	-0.0489772	-820	-0.0246790	-0.0212482	-327
17	0.9947818	0.9952705	40	0.0410669	0.0331538	823	0.0178159	0.0143824	336
18	0.9956844	0.9960236	25	0.0252383	0.0173210	826	0.0109479	0.0075127	345
19	0.9962880	0.9964778	-9	-0.0094027	-0.0014841	828	-0.0040770	-0.0006412	354
20	0.9965930	0.9966335	+6	+0.0064342	+0.0143515	830	+0.0027943	+0.0062293	363
21	+0.9965995	+0.9964911	+22	+0.0222672	+0.0301812	-832	+0.0096637	+0.0130973	-371
22	0.9963084	0.9960514	38	0.0380927	0.0460007	834	0.0165297	0.0199606	380
23	0.9957202	0.9953149	54	0.0539050	0.0618051	835	0.0233899	0.0268172	388
24	0.9948356	0.9942825	70	0.0697002	0.0775897	836	0.0302424	0.0336652	397
25	0.9936557	0.9929552	87	0.0854732	0.0933503	836	0.0370854	0.0405028	405
26	+0.9921812	+0.9913338	+103	+0.1012202	+0.1090824	-836	+0.0439171	+0.0473280	-413
27	0.9904130	0.9894190	120	0.1169363	0.1247814	836	0.0507353	0.0541388	421
28	0.9883520	0.9871222	137	0.1326172	0.1404431	836	0.0575382	0.0609334	429
29	0.9859995	0.9847141	154	0.1482587	0.1560634	836	0.0643242	0.0677102	437
30	0.9833561	0.9819256	171	0.1638566	0.1716378	836	0.0710913	0.0744672	445
31	+0.9804227	+0.9788475	+189	+0.1794065	+0.1871623	-835	+0.0778377	+0.0812027	-452
32	+0.9771998	+0.9754804	+206	+0.1949045	+0.2026323	-835	+0.0845618	+0.0879147	-459

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Apr. 1	+0.9771998	+0.9754804	+ 206	+0.1949045	+0.2026323	-835	+0.0845618	+0.0879147	-459
2	0.9736891	0.9718259	224	0.2103454	0.2180433	834	0.0912612	0.0946012	466
3	0.9698911	0.9678849	242	0.2257255	0.2333916	833	0.0979345	0.1012607	473
4	0.9658073	0.9636580	260	0.2410408	0.2486725	831	0.1045797	0.1078911	480
5	0.9614376	0.9591466	278	0.2562863	0.2638816	830	0.1111948	0.1144905	487
6	+0.9567847	+0.9543518	+ 296	+0.2714577	+0.2790139	-828	+0.1177779	+0.1210567	-493
7	0.9518484	0.9492749	314	0.2865499	0.2940653	826	0.1243267	0.1275878	499
8	0.9466313	0.9439179	333	0.3015594	0.3090316	824	0.1308397	0.1340820	505
9	0.9411348	0.9382819	351	0.3164812	0.3239076	822	0.1373146	0.1405370	511
10	0.9353596	0.9323684	370	0.3313102	0.3386884	819	0.1437492	0.1469508	517
11	+0.9293085	+0.9261800	+ 388	+0.3460419	+0.3533702	-816	+0.1501417	+0.1533216	-523
12	0.9229832	0.9197185	407	0.3606726	0.3679485	813	0.1564902	0.1596473	528
13	0.9163860	0.9129858	426	0.3751973	0.3824181	809	0.1627925	0.1659256	533
14	0.9095185	0.9059846	445	0.3896106	0.3967743	805	0.1690463	0.1721546	538
15	0.9023842	0.8987177	464	0.4039087	0.4110136	801	0.1752501	0.1783328	543
16	+0.8949853	+0.8911873	+ 483	+0.4180882	+0.4251318	-796	+0.1814023	+0.1844583	-547
17	0.8873241	0.8833960	502	0.4321439	0.4391242	791	0.1875006	0.1905290	551
18	0.8794035	0.8753469	521	0.4460722	0.4529872	786	0.1935433	0.1965433	555
19	0.8712266	0.8670431	540	0.4598689	0.4667167	781	0.1995289	0.2024998	559
20	0.8627968	0.8584878	559	0.4735302	0.4803090	775	0.2054557	0.2083965	562
21	+0.8541165	+0.8496834	+ 578	+0.4870526	+0.4937602	-769	+0.2113219	+0.2142319	-566
22	0.8451888	0.8406331	598	0.5004318	0.5070671	763	0.2171262	0.2200048	569
23	0.8360167	0.8313401	617	0.5136655	0.5202264	757	0.2228673	0.2257135	572
24	0.8266036	0.8218074	636	0.5267494	0.5332343	750	0.2285433	0.2313566	574
25	0.8169519	0.8120376	655	0.5396804	0.5460872	743	0.2341531	0.2369327	577
26	+0.8070648	+0.8020340	+ 675	+0.5524546	+0.5587822	-736	+0.2396951	+0.2424403	-579
27	0.7969455	0.7917995	694	0.5650696	0.5713164	729	0.2451680	0.2478781	581
28	0.7865965	0.7813369	714	0.5775221	0.5836860	721	0.2505704	0.2532447	583
29	0.7760211	0.7706495	734	0.5898080	0.5958878	713	0.2559008	0.2585387	585
30	0.7652223	0.7597400	754	0.6019248	0.6079187	705	0.2611581	0.2637588	586
May 1	+0.7542028	+0.7486112	+ 774	+0.6138691	+0.6197756	-697	+0.2663407	+0.2689036	-587
2	0.7429656	0.7372661	795	0.6256378	0.6314553	688	0.2714472	0.2739714	588
3	0.7315134	0.7257082	815	0.6372275	0.6429540	679	0.2764761	0.2789609	589
4	0.7198505	0.7139405	835	0.6486343	0.6542681	670	0.2814258	0.2838705	589
5	0.7079787	0.7019656	855	0.6598552	0.6653955	661	0.2862950	0.2886991	589
6	+0.6959017	+0.6897874	+ 875	+0.6708881	+0.6763323	-651	+0.2910825	+0.2934449	-589
7	0.6836232	0.6774094	895	0.6817279	0.6870748	641	0.2957863	0.2981064	589
8	0.6711466	0.6648350	915	0.6923725	0.6976205	631	0.3004052	0.3026824	589
9	0.6584753	0.6520681	935	0.7028183	0.7079654	620	0.3049378	0.3071713	589
10	0.6456138	0.6391128	954	0.7130616	0.7181066	609	0.3093826	0.3115717	588
11	+0.6325657	+0.6259729	+ 974	+0.7230999	+0.7280411	-598	+0.3137383	+0.3158822	-587
12	0.6193349	0.6126523	993	0.7329299	0.7377659	586	0.3180033	0.3201014	585
13	0.6059256	0.5991554	1013	0.7425488	0.7472781	574	0.3221765	0.3242284	583
14	0.5923422	0.5854865	1032	0.7519537	0.7565753	562	0.3262569	0.3282619	581
15	0.5785889	0.5716500	1051	0.7611425	0.7656545	549	0.3302433	0.3322007	579
16	+0.5646703	+0.5576502	+1070	+0.7701115	+0.7745133	-536	+0.3341342	+0.3360438	-576
17	+0.5505905	+0.5434916	+1089	+0.7788596	+0.7831499	-522	+0.3379292	+0.3397903	-573

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
May 17	+0.5505905	+0.5434916	+1089	+0.7788596	+0.7831499	-522	+0.3379292	+0.3397903	-573
18	0.5363543	0.5291792	1107	0.7873839	0.7915613	508	0.3416268	0.3434389	570
19	0.5219666	0.5147169	1126	0.7956819	0.7997457	494	0.3452263	0.3469890	567
20	0.5074308	0.5001090	1144	0.8037523	0.8077015	479	0.3487270	0.3504402	563
21	0.4927520	0.4853601	1162	0.8115931	0.8154267	464	0.3521283	0.3537912	559
22	+0.4779341	+0.4704745	+1180	+0.8192023	+0.8229196	-449	+0.3554290	+0.3570415	-555
23	0.4629818	0.4554565	1198	0.8265785	0.8301786	433	0.3586287	0.3601903	550
24	0.4478992	0.4403104	1216	0.8337197	0.8372015	417	0.3617264	0.3632369	545
25	0.4326906	0.4250403	1234	0.8406240	0.8439871	401	0.3647217	0.3661808	540
26	0.4173601	0.4096504	1252	0.8472905	0.8505342	385	0.3676140	0.3690214	535
27	+0.4019119	+0.3941449	+1270	+0.8537178	+0.8568410	-368	+0.3704027	+0.3717578	-530
28	0.3863500	0.3785278	1288	0.8599037	0.8629058	351	0.3730867	0.3743894	524
29	0.3706787	0.3628032	1306	0.8658470	0.8687271	334	0.3756657	0.3769155	518
30	0.3549019	0.3469754	1323	0.8715459	0.8743030	316	0.3781387	0.3793352	512
31	0.3390241	0.3310484	1340	0.8769984	0.8796321	298	0.3805050	0.3816480	506
June 1	+0.3230490	+0.3150266	+1357	+0.8822039	+0.8847134	-280	+0.3827641	+0.3838533	-499
2	0.3069815	0.2989142	1374	0.8871605	0.8895449	261	0.3849154	0.3859502	492
3	0.2908254	0.2827155	1390	0.8918664	0.8941250	242	0.3869577	0.3879379	485
4	0.2745852	0.2664354	1406	0.8963204	0.8984524	223	0.3888907	0.3898160	478
5	0.2582662	0.2500778	1421	0.9005206	0.9025251	203	0.3907137	0.3915836	471
6	+0.2418714	+0.2336480	+1436	+0.9044657	+0.9063422	-183	+0.3924258	+0.3932401	-464
7	0.2254079	0.2171511	1451	0.9081545	0.9099024	163	0.3940265	0.3947850	456
8	0.2088787	0.2005914	1465	0.9115857	0.9132041	142	0.3955154	0.3962176	448
9	0.1922898	0.1839743	1479	0.9147578	0.9162468	121	0.3968016	0.3975375	440
10	0.1756455	0.1673040	1493	0.9176708	0.9190293	100	0.3981552	0.3987445	431
11	+0.1589508	+0.1505867	+1506	+0.9203224	+0.9215502	-78	+0.3993054	+0.3998379	-422
12	0.1422121	0.1338272	1519	0.9227127	0.9238098	56	0.4003420	0.4008177	413
13	0.1254329	0.1170298	1532	0.9248414	0.9258072	34	0.4012650	0.4016837	403
14	0.1086187	0.1002005	1544	0.9267075	0.9275424	-11	0.4020739	0.4024358	393
15	0.0917755	0.0833441	1556	0.9283115	0.9290146	+12	0.4027691	0.4030738	383
16	+0.0749072	+0.0664654	+1568	+0.9296520	+0.9302236	+35	+0.4033499	+0.4035975	-373
17	0.0580193	0.0495694	1579	0.9307296	0.9311702	59	0.4038167	0.4040075	363
18	0.0411164	0.0326610	1590	0.9315450	0.9318539	83	0.4041698	0.4043034	353
19	0.0242037	+0.0157452	1601	0.9320970	0.9322746	107	0.4044086	0.4044854	342
20	+0.0072859	-0.0011736	1612	0.9323866	0.9324332	132	0.4045339	0.4045540	331
21	0.0096328	-0.0180909	+1622	+0.9324144	+0.9323300	+157	+0.4045457	+0.4045090	-320
22	0.0265474	0.0350018	1631	0.9321802	0.9319648	182	0.4044439	0.4043505	309
23	0.0434535	0.0519020	1640	0.9316840	0.9313381	207	0.4042287	0.4040787	298
24	0.0603468	0.0687871	1648	0.9309271	0.9304511	232	0.4039004	0.4036941	287
25	0.0772225	0.0856525	1656	0.9299099	0.9293033	258	0.4034595	0.4031965	275
26	-0.0940767	-0.1024946	+1663	+0.9286315	+0.9278947	+284	+0.4029053	+0.4025859	-263
27	0.1109053	0.1193082	1669	0.9270929	0.9262263	310	0.4022383	0.4018626	251
28	0.1277031	0.1360891	1674	0.9252949	0.9242988	336	0.4014589	0.4010271	239
29	0.1444658	0.1528329	1679	0.9232378	0.9221118	362	0.4005671	0.4000789	227
30	0.1611896	0.1695352	1683	0.9209210	0.9196657	388	0.3995626	0.3990183	215
31	-0.1778691	-0.1861909	+1687	+0.9183458	+0.9169614	+415	+0.3984460	+0.3978457	-202
32	-0.1945000	-0.2027058	+1690	+0.9155124	+0.9139900	+442	+0.3972173	+0.3965609	-190

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
July 1	-0.1778691	-0.1861909	+1687	+0.9183458	+0.9169614	+ 415	+0.3984460	+0.3978457	-202
2	0.1945000	0.2027958	1690	0.9155124	0.9139990	442	0.3972173	0.3965609	190
3	0.2110778	0.2193455	1692	0.9124211	0.9107788	469	0.3958766	0.3951643	177
4	0.2275981	0.2358351	1695	0.9090722	0.9073016	496	0.3944240	0.3936559	164
5	0.2440557	0.2522594	1697	0.9054669	0.9035683	523	0.3928600	0.3920363	151
6	-0.2604455	-0.2686135	+1699	+0.9016058	+0.8995795	+ 550	+0.3911849	+0.3903058	-138
7	0.2767627	0.2848326	1700	0.8974896	0.8953364	578	0.3893990	0.3884646	124
8	0.2930024	0.3010915	1701	0.8931197	0.8908395	605	0.3875027	0.3865132	110
9	0.3091596	0.3172064	1701	0.8884961	0.8860900	633	0.3854963	0.3844521	96
10	0.3252308	0.3332316	1700	0.8836212	0.8810898	661	0.3833806	0.3822820	82
11	-0.3412086	-0.3491615	+1699	+0.8784960	+0.8758399	+ 689	+0.3811564	+0.3800037	- 68
12	0.3570896	0.3649922	1697	0.8731218	0.8703420	717	0.3788241	0.3776177	54
13	0.3728690	0.3807195	1694	0.8675007	0.8645985	745	0.3763846	0.3751252	40
14	0.3885428	0.3963375	1691	0.8616351	0.8586103	773	0.3738389	0.3725261	26
15	0.4041039	0.4118420	1687	0.8555248	0.8523793	801	0.3711871	0.3698221	- 11
16	-0.4195507	-0.4272292	+1682	+0.8491739	+0.8459087	+ 829	+0.3684311	+0.3670142	+ 3
17	0.4348771	0.4424943	1677	0.8425837	0.8391994	857	0.3655715	0.3641029	18
18	0.4500799	0.4576331	1671	0.8357561	0.8322542	885	0.3626088	0.3610893	32
19	0.4651537	0.4726414	1664	0.8286938	0.8250754	913	0.3595446	0.3579747	47
20	0.4800956	0.4875159	1656	0.8213990	0.8176647	941	0.3563796	0.3547595	61
21	-0.4949016	-0.5022521	+1648	+0.8138731	+0.8100248	+ 969	+0.3531145	+0.3514450	+ 76
22	0.5095670	0.5168458	1639	0.8061197	0.8021579	997	0.3497509	0.3480322	91
23	0.5240883	0.5312941	1630	0.7981397	0.7940655	1024	0.3462891	0.3445217	106
24	0.5384625	0.5455928	1620	0.7899355	0.7857501	1052	0.3427301	0.3409145	121
25	0.5526846	0.5597377	1610	0.7815096	0.7772142	1079	0.3390750	0.3372117	136
26	-0.5667516	-0.5737259	+1599	+0.7728642	+0.7684596	+1107	+0.3353248	+0.3334142	+151
27	0.5806600	0.5875532	1587	0.7640010	0.7594889	1134	0.3314802	0.3295228	167
28	0.5944053	0.6012158	1575	0.7549232	0.7503037	1162	0.3275422	0.3255384	182
29	0.6079841	0.6147096	1563	0.7456312	0.7409064	1189	0.3235114	0.3214617	198
30	0.6213920	0.6280314	1550	0.7361293	0.7312997	1216	0.3193893	0.3172941	213
31	-0.6346268	-0.6411772	+1536	+0.7264182	+0.7214852	+1243	+0.3151763	+0.3130364	+229
Aug. 1	0.6476825	0.6541422	1521	0.7165010	0.7114659	1270	0.3108739	0.3086894	245
2	0.6605559	0.6669232	1506	0.7063801	0.7012440	1297	0.3064829	0.3042545	260
3	0.6732435	0.6795163	1490	0.6960578	0.6908218	1323	0.3020044	0.2997326	276
4	0.6857410	0.6919168	1474	0.6855365	0.6802025	1349	0.2974393	0.2951249	291
5	-0.6980435	-0.7041210	+1457	+0.6748199	+0.6693888	+1375	+0.2927894	+0.2904327	+306
6	0.7101485	0.7161254	1439	0.6639098	0.6583836	1400	0.2880552	0.2856572	321
7	0.7220512	0.7279256	1420	0.6528103	0.6471903	1425	0.2832389	0.2808002	336
8	0.7337480	0.7395181	1401	0.6415240	0.6358118	1450	0.2783415	0.2758628	351
9	0.7452353	0.7508990	1381	0.6300542	0.6242515	1475	0.2733644	0.2708464	366
10	-0.7565090	-0.7620649	+1360	+0.6184042	+0.6125128	+1499	+0.2683091	+0.2657527	+381
11	0.7675663	0.7730126	1339	0.6065778	0.6005994	1523	0.2631774	0.2605833	396
12	0.7784034	0.7837385	1317	0.5945783	0.5885150	1546	0.2579706	0.2553396	411
13	0.7890173	0.7942395	1295	0.5824099	0.5762632	1569	0.2526905	0.2500234	426
14	0.7994047	0.8045128	1272	0.5700756	0.5638477	1591	0.2473387	0.2446365	441
15	-0.8095633	-0.8145554	+1248	+0.5575798	+0.5512721	+1613	+0.2419170	+0.2391803	+456
16	-0.8194892	-0.8243646	+1224	+0.5449254	+0.5385402	+1635	+0.2364266	+0.2336562	+470

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Aug. 16	-0.8194892	-0.8243646	+1224	+0.5449254	+0.5385402	+1635	+0.2364266	+0.2336562	+470
17	0.8291809	0.8339375	1199	0.5321170	0.5256560	1657	0.2308694	0.2280664	485
18	0.8386344	0.8432717	1173	0.5191579	0.5126232	1678	0.2252473	0.2224122	499
19	0.8478488	0.8523653	1147	0.5060522	0.4994450	1699	0.2195614	0.2166950	514
20	0.8568208	0.8612150	1120	0.4928025	0.4861255	1719	0.2138133	0.2109166	528
21	0.8655478	-0.8698193	+1092	+0.4794141	+0.4726682	+1738	+0.2080050	+0.2050785	+542
22	0.8740288	0.8781755	1063	0.4658888	0.4590767	1757	0.2021375	0.1991823	556
23	0.8822596	0.8862812	1034	0.4522319	0.4453543	1775	0.1962129	0.1932292	570
24	0.8902396	0.8941342	1004	0.4384450	0.4315048	1793	0.1902318	0.1872210	584
25	0.8979650	0.9017320	974	0.4245338	0.4175321	1811	0.1841968	0.1811593	598
26	-0.9054348	-0.9090731	+ 944	+0.4105006	+0.4034394	+1828	+0.1781087	+0.1750453	+611
27	0.9126465	0.9161545	913	0.3963492	0.3892307	1845	0.1719692	0.1688808	625
28	0.9195969	0.9229735	882	0.3820842	0.3749098	1862	0.1657802	0.1626675	638
29	0.9262840	0.9295284	851	0.3677082	0.3604797	1878	0.1595429	0.1564068	651
30	0.9327061	0.9358166	820	0.3532250	0.3459448	1894	0.1532592	0.1501004	664
31	-0.9388598	-0.9418358	+ 789	+0.3386393	+0.3313089	+1909	+0.1469306	+0.1437500	+677
Sept. 1	0.9447439	0.9475836	758	0.3239543	0.3165762	1923	0.1405589	0.1373575	690
2	0.9503549	0.9530580	727	0.3091750	0.3017508	1937	0.1341460	0.1309246	703
3	0.9556922	0.9582570	695	0.2943045	0.2868367	1950	0.1276936	0.1244531	715
4	0.9607522	0.9631776	662	0.2793478	0.2718385	1963	0.1212035	0.1179450	727
5	-0.9655331	-0.9678187	+ 629	+0.2643092	+0.2567606	+1975	+0.1146779	+0.1114025	+739
6	0.9700341	0.9721788	595	0.2491932	0.2416075	1987	0.1081189	0.1048273	751
7	0.9742527	0.9762556	560	0.2340041	0.2263837	1998	0.1015280	0.0982214	762
8	0.9781873	0.9800477	525	0.2187468	0.2110942	2008	0.0949076	0.0915871	774
9	0.9818366	0.9835538	489	0.2034262	0.1957434	2018	0.0882599	0.0849263	785
10	-0.9851993	-0.9867729	+ 453	+0.1880465	+0.1803365	+2027	+0.0815866	+0.0782412	+796
11	0.9882745	0.9897042	417	0.1726135	0.1648774	2036	0.0748903	0.0715338	807
12	0.9910616	0.9923463	380	0.1571297	0.1493712	2044	0.0681723	0.0648061	818
13	0.9935586	0.9946987	343	0.1416022	0.1338232	2051	0.0614354	0.0580604	828
14	0.9957663	0.9967612	306	0.1260349	0.1182378	2058	0.0546813	0.0512985	838
15	-0.9976833	-0.9985328	+ 268	+0.1104324	+0.1026194	+2065	+0.0479122	+0.0445225	+848
16	0.9993095	1.0000133	231	0.0947993	0.0869725	2071	0.0411298	0.0377343	858
17	1.0006442	1.0012023	193	0.0791396	0.0713011	2076	0.0343362	0.0309356	867
18	1.0016876	1.0021000	155	0.0634578	0.0556103	2080	0.0275328	0.0241284	876
19	1.0024395	1.0027959	117	0.0477591	0.0399044	2084	0.0207223	0.0173147	885
20	-1.0028993	-1.0030195	+ 79	+0.0320470	+0.0241877	+2087	+0.0139059	+0.0104963	+894
21	1.0030667	1.0030410	40	0.0163267	+0.0084645	2090	0.0070859	+0.0036750	902
22	1.0029423	1.0027702	+ 1	+0.0006016	-0.0072614	2091	+0.0002638	-0.0031474	910
23	1.0025249	1.0022066	- 38	-0.0151240	0.0229854	2092	-0.0065586	0.0099694	918
24	1.0018152	1.0013503	77	0.0308454	0.0387036	2092	0.0133796	0.0167890	925
25	-1.0008122	-1.0002010	- 116	-0.0465590	-0.0544104	+2092	0.0201972	-0.0236039	+932
26	0.9995164	0.9987584	155	0.0622580	0.0701026	2091	0.0270089	0.0304122	939
27	0.9979270	0.9970224	195	0.0779418	0.0857754	2090	0.0338135	0.0372125	945
28	0.9960444	0.9949932	235	0.0936030	0.1014240	2088	0.0406088	0.0440024	951
29	0.9938086	0.9926706	275	0.1092379	0.1170445	2085	0.0473929	0.0507803	957
30	-0.9913991	-0.9900542	- 315	-0.1248429	-0.1326321	+2082	0.0541641	-0.0575440	+963
31	-0.9886361	-0.9871449	- 355	-0.1404118	-0.1481815	+2079	0.0609197	-0.0642911	+968

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.		
Oct.	1	-0.9886361	-0.9871449	-355	-0.1404118	-0.1481815	+2079	-0.0609197	-0.0642911	+968
	2	0.9855805	0.9839428	395	0.1559406	0.1636884	2075	0.0676578	0.0710197	973
	3	0.9822320	0.9804480	436	0.1714242	0.1791476	2070	0.0743765	0.0777279	977
	4	0.9785911	0.9766615	476	0.1868578	0.1945543	2065	0.0810735	0.0844131	982
	5	0.9746591	0.9725837	516	0.2022365	0.2099039	2059	0.0877464	0.0910734	986
	6	-0.9704358	-0.9682157	-556	-0.2175556	-0.2251908	+2052	-0.0943936	-0.0977065	+990
	7	0.9659233	0.9635587	597	0.2328093	0.2404106	2045	0.1010121	0.1043102	993
	8	0.9611222	0.9586138	637	0.2479940	0.2555589	2037	0.1076006	0.1108829	996
	9	0.9560339	0.9533826	677	0.2631046	0.2706302	2028	0.1141568	0.1174219	999
	10	0.9506602	0.9478667	717	0.2781353	0.2856195	2019	0.1206781	0.1239252	1001
	11	-0.9450024	-0.9420674	-758	-0.2930822	-0.3005226	+2009	-0.1271630	-0.1303910	+1003
	12	0.9390621	0.9359869	799	0.3079402	0.3153344	1998	0.1336091	0.1368170	1005
	13	0.9328420	0.9296274	839	0.3227046	0.3300505	1987	0.1400145	0.1432014	1006
	14	0.9263434	0.9229903	879	0.3373714	0.3446667	1975	0.1463775	0.1495424	1007
	15	0.9195685	0.9160782	919	0.3519360	0.3591787	1963	0.1526959	0.1558380	1008
	16	-0.9125196	-0.9088931	-959	-0.3663943	-0.3735826	+1950	-0.1589683	-0.1620867	+1008
	17	0.9051988	0.9014370	998	0.3807426	0.3878735	1936	0.1651928	0.1682864	1008
	18	0.8976080	0.8937120	1038	0.3949752	0.4020473	1921	0.1713673	0.1744353	1008
	19	0.8897494	0.8857204	1077	0.4090892	0.4161004	1906	0.1774903	0.1805321	1007
	20	0.8816254	0.8774648	1117	0.4230803	0.4300284	1890	0.1835603	0.1865747	1006
	21	-0.8732386	-0.8689468	-1156	-0.4369444	-0.4438279	+1874	-0.1895751	-0.1925615	+1004
	22	0.8645900	0.8601689	1195	0.4506782	0.4574945	1857	0.1955336	0.1984909	1002
	23	0.8556833	0.8511333	1234	0.4642766	0.4710244	1840	0.2014335	0.2043612	1000
	24	0.8465194	0.8418421	1274	0.4777371	0.4844139	1823	0.2072737	0.2101707	998
	25	0.8371015	0.8322977	1313	0.4910544	0.4976581	1805	0.2130519	0.2159172	995
	26	-0.8274310	-0.8225018	-1352	-0.5042246	-0.5107536	+1787	-0.2187664	-0.2215994	+992
	27	0.8175106	0.8124578	1391	0.5172444	0.5236964	1769	0.2244159	0.2272155	989
	28	0.8073434	0.8021676	1430	0.5301092	0.5364824	1750	0.2299981	0.2327636	985
	29	0.7969309	0.7916337	1469	0.5428154	0.5491073	1730	0.2355116	0.2382418	981
	30	0.7862762	0.7808588	1507	0.5553579	0.5615671	1709	0.2409540	0.2436483	977
Nov.	31	-0.7753818	-0.7698458	-1545	-0.5677339	-0.5738575	+1688	-0.2463242	-0.2489814	+972
	1	0.7642511	0.7585979	1582	0.5799376	0.5859740	1666	0.2516197	0.2542389	967
	2	0.7528867	0.7471182	1619	0.5919660	0.5979131	1643	0.2568389	0.2594194	961
	3	0.7412925	0.7354100	1656	0.6038148	0.6096706	1619	0.2619802	0.2645210	955
	4	0.7294712	0.7234767	1692	0.6154800	0.6212424	1595	0.2670415	0.2695417	948
	5	-0.7174268	-0.7113218	-1728	-0.6269573	-0.6326241	+1570	-0.2720212	-0.2744799	+941
	6	0.7051626	0.6989499	1764	0.6382425	0.6438120	1545	0.2769175	0.2793338	934
	7	0.6926838	0.6863642	1800	0.6493322	0.6548028	1519	0.2817287	0.2841021	926
	8	0.6799922	0.6735685	1835	0.6602231	0.6655926	1493	0.2864536	0.2887829	918
	9	0.6670935	0.6605676	1870	0.6709110	0.6761779	1466	0.2910900	0.2933750	910
	10	-0.6539914	-0.6473657	-1905	-0.6813930	-0.6865558	+1439	-0.2956374	-0.2978770	+901
	11	0.6406907	0.6339669	1940	0.6916658	0.6967224	1411	0.3000936	0.3022871	892
	12	0.6271948	0.6203751	1974	0.7017254	0.7066746	1383	0.3044574	0.3066043	883
	13	0.6135082	0.6065948	2008	0.7115696	0.7164100	1354	0.3087277	0.3108274	873
	14	0.5996353	0.5926304	2041	0.7211955	0.7259257	1324	0.3129033	0.3149552	863
	15	-0.5855805	-0.5784864	-2074	-0.7306002	-0.7352186	+1294	-0.3169830	-0.3189866	+853
16	-0.5713431	-0.5641667	-2107	-0.7397807	-0.7442863	+1263	-0.3209657	-0.3229203	+842	

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 1.0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Nov. 16	-0.5713483	-0.5641667	-2107	-0.7397807	-0.7442863	+1263	-0.3209657	-0.3229203	+ 842
17	0.5569422	0.5496754	2139	0.7487348	0.7531258	1231	0.3248501	0.3267551	831
18	0.5423668	0.5350168	2170	0.7574592	0.7617351	1199	0.3286351	0.3304901	819
19	0.5276260	0.5201950	2201	0.7659527	0.7701114	1166	0.3323199	0.3341242	807
20	0.5127244	0.5052145	2231	0.7742113	0.7782521	1133	0.3359031	0.3376564	795
21	-0.4976660	-0.4900798	-2261	-0.7822335	-0.7861550	+1099	-0.3393839	-0.3410855	+ 783
22	0.4824559	0.4747942	2290	0.7900164	0.7938176	1065	0.3427610	0.3444104	770
23	0.4670959	0.4593621	2319	0.7975581	0.8012374	1030	0.3460335	0.3476300	757
24	0.4515929	0.4437882	2348	0.8048554	0.8084120	995	0.3492000	0.3507434	743
25	0.4359492	0.4280768	2377	0.8119067	0.8153388	959	0.3522599	0.3537493	729
26	-0.4201712	-0.4123224	-2405	0.8187082	-0.8220149	+ 923	-0.3552115	-0.3566464	+ 715
27	0.4042615	0.3962594	2432	0.8252584	0.8284385	887	0.3580540	0.3594340	701
28	0.3882264	0.3801630	2459	0.8315548	0.8346070	850	0.3607864	0.3621109	686
29	0.3720697	0.3639471	2485	0.8375948	0.8405179	813	0.3634074	0.3646758	671
30	0.3557959	0.3476166	2510	0.8433761	0.8461694	775	0.3659161	0.3671282	656
Dec. 1	-0.3394101	-0.3311774	-2535	-0.8488973	-0.8515591	+ 736	-0.3683118	-0.3694667	+ 640
2	0.3229188	0.3146350	2559	0.8541548	0.8566844	697	0.3705929	0.3716904	624
3	0.3063265	0.2979938	2582	0.8591475	0.8615438	657	0.3727590	0.3737986	608
4	0.2896378	0.2812594	2604	0.8638733	0.8661358	617	0.3748091	0.3757906	592
5	0.2728591	0.2644376	2625	0.8683310	0.8704582	576	0.3767429	0.3776655	575
6	-0.2559957	-0.2475340	-2646	-0.8725176	-0.8745094	+ 535	-0.3785587	-0.3794226	+ 558
7	0.2390531	0.2305538	2666	0.8764330	0.8782881	493	0.3802569	0.3810615	541
8	0.2220369	0.2135030	2685	0.8800748	0.8817932	451	0.3818364	0.3825816	524
9	0.2049528	0.1963867	2704	0.8834431	0.8850241	408	0.3832970	0.3839827	506
10	0.1878057	0.1792106	2722	0.8865364	0.8879798	365	0.3846385	0.3852642	488
11	-0.1706019	-0.1619803	-2740	-0.8893540	-0.8906588	+ 322	-0.3858600	-0.3864258	+ 470
12	0.1533466	0.1447018	2757	0.8918944	0.8930611	278	0.3869617	0.3874676	451
13	0.1360461	0.1273800	2773	0.8941584	0.8951861	234	0.3879434	0.3883890	432
14	0.1187044	0.1100200	2789	0.8961443	0.8970332	190	0.3888046	0.3891901	412
15	0.1013275	0.0926274	2804	0.8978526	0.8986024	145	0.3895455	0.3898707	393
16	-0.0839205	-0.0752073	-2818	-0.8992825	-0.8998930	+ 100	-0.3901658	-0.3904307	+ 373
17	0.0664885	0.0577648	2831	0.9004340	0.9009056	55	0.3906654	0.3908701	353
18	0.0490369	0.0403054	2844	0.9013075	0.9016393	+ 9	0.3910446	0.3911887	333
19	0.0315707	0.0228334	2855	0.9019013	0.9020936	- 37	0.3913026	0.3913862	313
20	-0.0140943	-0.0053545	-2866	-0.9022162	-0.9022693	83	0.3914395	0.3914629	292
21	+0.0033859	+0.0121266	-2875	-0.9022526	-0.9021657	- 129	-0.3914559	-0.3914186	+ 272
22	0.0208665	0.0296048	2884	0.9020090	0.9017826	176	0.3913510	0.3912530	251
23	0.0383409	0.0470743	2892	0.9014865	0.9011204	223	0.3911248	0.3909663	230
24	0.0558044	0.0645306	2899	0.9006845	0.9001786	271	0.3907775	0.3905583	209
25	0.0732522	0.0819686	2905	0.8996028	0.8990570	318	0.3903087	0.3900289	188
26	+0.0906790	+0.0993828	-2910	-0.8982414	-0.8974559	- 366	-0.3897187	-0.3893782	+ 166
27	0.1080792	0.1167675	2914	0.8966007	0.8956758	413	0.3890073	0.3886062	145
28	0.1254471	0.1341177	2918	0.8946811	0.8936164	461	0.3881749	0.3877131	123
29	0.1427782	0.1514276	2921	0.8924820	0.8912779	509	0.3872210	0.3866987	101
30	0.1600654	0.1686913	2923	0.8900043	0.8886611	558	0.3861461	0.3855633	79
31	+0.1773043	+0.1859037	-2922	-0.8872485	-0.8857664	- 608	-0.3849503	-0.3843072	+ 56
32	+0.1944887	+0.2030586	-2921	-0.8842151	-0.8825947	- 658	-0.3836339	-0.3829307	+ 33

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		Day of Month.	FEBRUARY.		Day of Month.	MARCH.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	109° 5' 30.1"	+3° 39' 49.4"	1.0	161° 35' 17.8"	-0° 43' 25.0"	1.0	185° 8' 25.3"	-2° 46' 6.1"
1.5	116 12 55.6	3 11 42.5	1.5	169 0 12.3	1 23 30.6	1.5	192 40 34.7	3 20 10.1
2.0	123 22 36.4	2 40 22.9	2.0	176 23 14.3	2 2 2.9	2.0	200 9 24.5	3 50 31.8
2.5	130 33 50.8	2 6 20.9	2.5	183 43 39.3	2 38 20.6	2.5	207 33 58.8	4 16 42.5
3.0	137 45 57.9	1 30 10.8	3.0	191 0 49.6	3 11 48.0	3.0	214 53 31.5	4 38 21.7
3.5	144 58 19.4	+0 52 30.2	3.5	198 14 14.9	-3 41 54.1	3.5	222 7 25.8	-4 55 16.5
4.0	152 10 21.4	+0 13 58.3	4.0	205 23 32.1	4 8 13.9	4.0	229 15 15.8	5 7 21.5
4.5	159 21 34.3	-0 24 45.1	4.5	212 28 24.5	4 30 29.1	4.5	236 16 45.7	5 14 37.8
5.0	166 31 33.2	1 3 0.1	5.0	219 28 42.2	4 48 26.5	5.0	243 11 49.2	5 17 11.7
5.5	173 39 58.0	1 40 8.6	5.5	226 24 20.7	5 1 58.7	5.5	250 0 28.6	5 15 13.8
6.0	180 46 33.2	-2 15 35.0	6.0	233 15 20.2	-5 11 2.6	6.0	256 42 53.2	-5 8 58.1
6.5	187 51 7.4	2 48 46.7	6.5	240 1 44.7	5 15 39.6	6.5	263 19 18.1	4 58 41.1
7.0	194 53 32.1	3 19 14.1	7.0	246 43 41.1	5 15 54.8	7.0	269 50 3.0	4 44 40.7
7.5	201 53 40.9	3 46 31.9	7.5	253 21 18.3	5 11 56.2	7.5	276 15 31.1	4 27 16.2
8.0	208 51 29.5	4 10 18.4	8.0	259 54 46.8	5 3 54.6	8.0	282 36 7.6	4 6 47.3
8.5	215 46 54.1	-4 30 16.2	8.5	266 24 18.1	-4 52 3.1	8.5	288 52 19.2	-3 43 34.3
9.0	222 39 50.7	4 46 11.5	9.0	272 50 3.9	4 36 37.0	9.0	295 4 33.1	3 17 57.6
9.5	229 30 15.2	4 57 55.1	9.5	279 12 15.9	4 17 52.7	9.5	301 13 15.9	2 50 17.7
10.0	236 18 2.9	5 5 21.8	10.0	285 31 5.9	3 56 8.7	10.0	307 18 54.0	2 20 55.4
10.5	243 3 7.6	5 8 30.0	10.5	291 46 45.4	3 31 44.4	10.5	313 21 52.4	1 50 11.0
11.0	249 45 22.4	-5 7 22.2	11.0	297 59 25.5	-3 5 0.1	11.0	319 22 34.9	-1 18 25.1
11.5	256 24 40.1	5 2 4.5	11.5	304 9 17.4	2 36 17.1	11.5	325 21 23.9	0 45 58.2
12.0	263 0 53.1	4 52 46.5	12.0	310 16 31.9	2 5 56.9	12.0	331 18 40.0	-0 13 10.5
12.5	269 33 53.2	4 39 40.9	12.5	316 21 20.1	1 34 21.6	12.5	337 14 42.7	+0 19 37.9
13.0	276 3 33.4	4 23 3.4	13.0	322 23 54.0	1 1 53.1	13.0	343 9 50.0	0 52 6.9
13.5	282 29 48.1	-4 3 11.8	13.5	328 24 25.6	-0 28 53.2	13.5	349 4 18.8	+1 23 57.3
14.0	288 52 32.9	3 40 26.2	14.0	334 23 8.2	+0 4 16.7	14.0	354 58 25.3	1 54 49.8
14.5	295 11 46.0	3 15 8.0	14.5	340 20 16.2	0 37 15.6	14.5	0 52 24.9	2 24 26.2
15.0	301 27 28.3	2 47 39.6	15.0	346 16 5.4	1 9 43.5	15.0	6 46 32.7	2 52 28.8
15.5	307 39 43.5	2 18 23.9	15.5	352 10 53.1	1 41 20.9	15.5	12 41 3.9	3 18 40.7
16.0	313 48 39.1	-1 47 44.2	16.0	358 4 58.3	+2 11 49.6	16.0	18 36 13.6	+3 42 45.8
16.5	319 54 25.8	1 16 3.1	16.5	3 58 41.9	2 40 52.0	16.5	24 32 18.0	4 4 29.2
17.0	325 57 17.9	0 43 43.0	17.0	9 52 26.7	3 8 11.6	17.0	30 29 33.7	4 23 37.0
17.5	331 57 33.2	-0 11 5.1	17.5	15 46 37.3	3 33 32.8	17.5	36 28 18.9	4 39 56.2
18.0	337 55 32.8	+0 21 30.0	18.0	21 41 40.5	3 56 40.6	18.0	42 28 52.5	4 53 14.9
18.5	343 51 41.1	+0 53 43.0	18.5	27 38 4.6	+4 17 21.0	18.5	48 31 35.5	+5 3 22.5
19.0	349 46 25.6	1 25 15.2	19.0	33 36 19.8	4 35 20.4	19.0	54 36 49.8	5 10 9.4
19.5	355 40 16.4	1 55 49.2	19.5	39 36 57.7	4 50 26.1	19.5	60 44 59.3	5 13 27.1
20.0	1 33 46.3	2 25 8.4	20.0	45 40 30.7	5 2 25.6	20.0	66 56 28.6	5 13 8.5
20.5	7 27 29.7	2 52 56.8	20.5	51 47 32.4	5 11 7.0	20.5	73 11 43.8	5 9 7.5
21.0	13 22 3.1	+3 18 58.6	21.0	57 58 35.8	+5 16 19.0	21.0	79 31 11.4	+5 1 19.8
21.5	19 18 4.4	3 42 58.9	21.5	64 14 13.9	5 17 51.2	21.5	85 55 18.1	4 49 42.8
22.0	25 16 11.9	4 4 42.9	22.0	70 34 58.2	5 15 33.7	22.0	92 24 30.0	4 34 15.8
22.5	31 17 4.3	4 23 55.5	22.5	77 1 18.1	5 9 18.3	22.5	98 59 11.8	4 15 0.5
23.0	37 21 19.8	4 40 21.9	23.0	83 33 39.7	4 58 58.6	23.0	105 39 45.6	3 52 2.0
23.5	43 29 35.5	+4 53 47.4	23.5	90 12 25.0	+4 44 30.4	23.5	112 26 30.5	+3 25 28.0
24.0	49 42 26.6	5 3 57.1	24.0	96 57 50.4	4 25 52.8	24.0	119 19 40.3	2 55 33.5
24.5	56 0 25.4	5 10 36.8	24.5	103 50 5.6	4 3 9.0	24.5	126 19 22.8	2 22 33.7
25.0	62 24 0.5	5 13 32.7	25.0	110 49 12.1	3 36 27.1	25.0	133 25 37.8	1 46 52.5
25.5	68 53 35.7	5 12 32.0	25.5	117 55 2.6	3 6 1.0	25.5	140 38 16.1	1 8 58.7
26.0	75 29 28.7	+5 7 24.1	26.0	125 7 19.6	+2 32 11.3	26.0	147 56 58.6	+0 29 26.8
26.5	82 11 50.1	4 58 0.9	26.5	132 25 34.8	1 55 24.9	26.5	155 21 14.4	-0 11 3.0
27.0	89 0 42.9	4 44 17.3	27.0	139 49 9.7	1 16 15.9	27.0	162 50 21.5	0 51 45.8
27.5	95 56 1.0	4 26 12.9	27.5	147 17 15.6	+0 35 25.3	27.5	170 23 26.9	1 31 53.5
28.0	102 57 29.1	4 3 52.6	28.0	154 48 55.0	-0 6 21.6	28.0	177 59 27.2	2 10 36.3
28.5	110 4 42.9	3 37 27.5	28.5	162 23 2.8	0 48 14.8	28.5	185 37 10.7	2 47 5.3
29.0	117 17 8.5	+3 7 15.3	29.0	169 58 28.8	-1 29 23.3	29.0	193 15 20.4	-3 20 34.6
29.5	124 34 4.0	2 33 40.6	29.5	177 34 0.3	2 8 56.5	29.5	200 52 36.3	3 50 23.2
30.0	131 54 40.7	1 57 15.0	30.0	185 8 25.3	2 46 6.1	30.0	208 27 39.7	4 15 57.3
30.5	139 18 4.4	1 18 35.8	30.5	192 40 34.7	3 20 10.1	30.5	215 59 15.5	4 36 51.4
31.0	146 43 17.5	+0 38 25.3	31.0	200 9 24.5	3 50 31.8	31.0	223 26 16.8	4 52 49.0
31.5	154 9 21.2	-0 2 30.6	31.5	207 33 58.8	-4 16 42.5	31.5	230 47 45.6	-5 3 47.6

FOR GREENWICH MEAN NOON AND MIDNIGHT.

APRIL				MAY				JUNE			
Day of Month	True Long'te	Lat'te		Day of Month	True Long'te	Lat'te		Day of Month	True Long'te	Lat'te	
10	254 28 55.7	5 0	32.3	10	274 17 37	4 13	1	10	32 25 25	0 35	17.9
15	265 31 14.7	5 10	27.8	15	275 48 51	3 51	47	15	37 27 21	0 3	57
20	273 32 20.7	5 6	17.2	20	277 34 47	3 27	49.7	20	41 10 53	0 22	10
25	279 36 34	4 48	20.7	25	284 28 34	3 1	27	25	45 47	1 0	35.7
30	285 52 35.4	4 40	6.2	30	290 24 37.4	2 33	37.1	30	49 8 54	1 31	17.2
35	292 31 42.1	4 30	8.5	35	296 47 52.1	2 3	37.7	35	51 3 14.3	2 0	43.2
40	299 4 17.3	4 10	53.9	40	302 52 17	1 32	55.1	40	52 0 4	2 25	57.4
45	305 3 27.4	3 48	45.2	45	308 58 31.5	1 13	5	45	52 54 51.5	2 55	24.3
50	311 5 43.2	3 24	7.8	50	315 1 41.5	0 2	4.3	50	53 2 27	3 22	35.3
55	317 5 48.7	2 57	22.1	55	321 1 26.7	0 2	6.8	55	54 44 42.0	3 42	25.4
60	324 15 50.2	2 28	52.4	60	327 15 34.3	0 33	41.1	60	55 41 23.1	4 0	31.3
65	330 22 10.4	1 58	52.4	65	332 15 37	1 4	4.4	65	56 37 42.7	4 20	3.1
70	336 24 52.7	1 28	37	70	337 47 71	1 34	5.2	70	57 37 15.7	4 34	48.1
75	342 24 42	0 56	21.3	75	344 41 42.7	2 3	7.4	75	58 43 24.0	4 47	34.7
80	348 27 12.2	0 24	21.3	80	350 35 15.2	2 31	42.2	80	59 43 31.2	4 55	59.3
85	354 27 45.3	0 7	43.5	85	356 29 15.2	2 57	48.5	85	59 49 49.7	5 0	21.7
90	359 32 21	0 52	17.5	90	362 24 23	3 22	17	90	59 51 15.5	5 2	5.3
95	365 36 13.2	1 12	57.2	95	368 18 22.2	3 44	5.2	95	59 52 45.2	5 0	15.3
100	371 39 37.6	1 41	2.5	100	374 12 27.3	4 3	47.4	100	59 53 31.2	4 54	6.4
105	377 51 28	2 10	5.0	105	380 15 22.7	4 28	3.7	105	59 54 37.7	4 45	21.1
110	383 47 52.4	2 38	42.1	110	386 2 31.7	4 35	47	110	59 55 47.0	4 32	18.2
115	389 41 23.8	3 5	5.5	115	392 15 47	4 47	15.2	115	59 56 18.1	4 15	35.5
120	395 34 53.2	3 22	2.5	120	398 15 21	4 54	7	120	59 56 45.2	3 55	27.7
125	401 28 55.5	3 51	2.5	125	404 41 55.5	4 55	47	125	59 57 27.3	3 31	45.1
130	407 23 41.3	4 11	3.2	130	410 34 22.7	4 52	55.4	130	59 58 12.2	3 5	37
135	413 18 21.1	4 37	57	135	416 26 34.7	4 57	22.4	135	59 58 41.7	2 31	31.3
140	419 13 52.7	4 57	7	140	422 18 57	4 51	12.2	140	59 59 21.7	2 3	47.5
145	425 9 47.6	4 52	46.6	145	428 11 17	4 41	26.7	145	59 59 54	1 22	47.6
150	431 4 47.2	5 0	12.1	150	434 3 11.5	4 27	3.5	150	59 60 44	0 42	27
155	437 0 33.7	5 4	22.1	155	440 15 15	4 11	3.7	155	59 61 37.3	0 17	57.3
160	443 52 41.7	5 5	8	160	446 7 28.2	3 57	46.7	160	59 62 27.3	0 14	48.7
165	449 48 35.3	5 2	11.3	165	452 15 3	3 27	13.7	165	59 63 11.7	0 35	5.7
170	455 44 27	4 55	17.4	170	458 14 57	3	46.7	170	59 63 57	1 32	4.6
175	461 40 17.6	4 45	21.5	175	464 14 31	2 31	5.2	175	59 64 42.1	2 7	5.3
180	467 36 7.2	4 31	31.4	180	470 14 5	2 7	5.2	180	59 65 31.3	2 42	21.8
185	473 32 44.2	4 14	6.2	185	476 15 23	1 27	31.4	185	59 66 22	3 11	18.1
190	479 29 7.3	3 53	15.3	190	482 15 45	1	55.3	190	59 67 15.1	3 2	23.2
195	485 26 57.7	3 29	6.2	195	488 16 12.2	0 25	26.7	195	59 68 10.2	4 4	10.3
200	491 24 12.2	3 1	6.5	200	494 16 39	0 2	17	200	59 69 7	4 25	11.3
205	497 21 4.3	2 51	44.5	205	500 17 7	0 57	3.2	205	59 69 56.3	4 42	47
210	503 18 51	2 52	6.3	210	506 17 34.7	1 34	2	210	59 70 47.3	4 54	33.3
215	509 16 43.7	1 24	17.5	215	512 18 11.7	2 2	2.4	215	59 71 37.7	5 2	23.2
220	515 14 40.2	0 47	47.5	220	518 18 57	2 46	21	220	59 72 27.7	5 5	9.3
225	521 12 4.5	0 1	7.2	225	524 19 43	3 13	6.7	225	59 73 17.7	5 3	7
230	527 10 17.3	0 25	12.2	230	530 20 29	3 41	3	230	59 74 7.7	4 57	6.3
235	533 8 14 31.7	0	6 31.2	235	536 21 15	4 9	22	235	59 75 0.4	4 47	4.3
240	539 6 15 12.3	1 40	6.4	240	542 22 0	4 27	4	240	59 75 50.4	4 31	7
245	545 4 21	2 2	7	245	548 22 46	4 4	6.3	245	59 76 40.7	4 12	7
250	551 2 22 54	2 56	2.1	250	554 23 32	4 7	47.5	250	59 77 31	3 5	7
255	557 0 23 4	3 25	22.5	255	560 24 18	4 5	20.3	255	59 78 21.3	3 26	47.5
260	563 58 15 15.5	3 52	57.7	260	566 25 4	4	7	260	59 79 11.4	3 7	37
265	569 56 16	4 20	2.4	265	572 25 50	4 5	3	265	59 80 2.2	2 27	3
270	575 54 16.5	4 45	27.5	270	578 26 36	4 47	57	270	59 81 12.7	1 54	7
275	581 52 17	4 5	3	275	584 27 22	4	7	275	59 82 3	1	7
280	587 50 17.5	4 55	3	280	590 28 8	4	7	280	59 83 24.4	0 32	7
285	593 48 18.3	5 2	53.3	285	596 28 54	3	7	285	59 84 14.7	0	4
290	599 46 19.4	5 28 53		290	602 29 40	3	7	290	59 85 5	1 54	7
295	605 44 20.1	4 51	3.3	295	608 30 26	2	7	295	59 86 55	2 25	6
300	611 42 21	4 21	3	300	614 31 12	1	7	300	59 87 45	2 56	5

FOR GREENWICH MEAN NOON AND MIDNIGHT.								
Day of Month.	JULY.		Day of Month.	AUGUST.		Day of Month.	SEPTEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	353 3 56.1	+2 23 42.3	1.0	36 38 45.1	+5 0 45.1	1.0	81 29 56.6	+4 41 47.6
1.5	359 0 56.9	2 51 25.5	1.5	42 38 26.0	5 9 17.2	1.5	87 50 53.3	4 24 14.7
2.0	4 56 49.5	3 17 12.5	2.0	48 40 37.2	5 14 28.5	2.0	94 17 16.6	4 3 8.4
2.5	10 52 12.0	3 40 50.3	2.5	54 45 52.7	5 16 11.6	2.5	100 49 31.1	3 38 34.4
3.0	16 47 43.0	4 2 6.4	3.0	60 54 44.7	5 14 19.6	3.0	107 27 57.1	3 10 42.2
3.5	22 44 0.1	+4 20 48.7	3.5	67 7 43.3	+5 8 46.7	3.5	114 12 49.3	+2 39 45.2
4.0	28 41 39.6	4 36 45.9	4.0	73 25 15.6	4 59 28.4	4.0	121 4 15.2	2 6 1.5
4.5	34 41 16.5	4 49 46.7	4.5	79 47 44.9	4 46 22.3	4.5	128 2 14.6	1 29 54.4
5.0	40 43 23.7	4 59 40.3	5.0	86 15 30.4	4 29 28.4	5.0	135 6 38.2	0 51 52.5
5.5	46 48 31.2	5 6 16.6	5.5	92 48 46.0	4 8 49.6	5.5	142 17 6.9	+0 12 30.3
6.0	52 57 5.7	+5 9 26.3	6.0	99 27 39.8	+3 44 32.7	6.0	149 33 11.5	-0 27 33.6
6.5	59 9 30.5	5 9 0.9	6.5	106 12 13.6	3 16 48.5	6.5	156 54 13.1	1 7 35.8
7.0	65 26 4.6	5 4 53.6	7.0	113 2 22.1	2 45 52.8	7.0	164 19 23.1	1 46 50.3
7.5	71 47 2.2	4 56 59.4	7.5	119 57 53.2	2 12 6.3	7.5	171 47 45.0	2 24 30.1
8.0	78 12 32.6	4 45 15.9	8.0	126 58 27.7	1 35 55.4	8.0	179 18 15.2	2 59 49.1
8.5	84 42 39.6	+4 29 43.5	8.5	134 3 39.7	+0 57 51.5	8.5	186 49 47.0	-3 32 4.0
9.0	91 17 22.4	4 10 25.9	9.0	141 12 57.0	+0 18 30.5	9.0	194 21 11.4	4 0 36.5
9.5	97 56 35.0	3 47 31.2	9.5	148 25 42.1	-0 21 27.8	9.5	201 51 20.5	4 24 54.4
10.0	104 40 6.3	3 21 11.9	10.0	155 41 13.2	1 1 20.9	10.0	209 19 10.9	4 44 33.2
10.5	111 27 41.1	2 51 44.5	10.5	162 58 45.7	1 40 25.2	10.5	216 43 45.2	4 59 16.6
11.0	118 19 0.7	+2 19 30.3	11.0	170 17 33.3	-2 17 57.2	11.0	224 4 13.7	-5 8 56.1
11.5	125 13 43.3	1 44 55.6	11.5	177 36 49.7	2 53 15.4	11.5	231 19 55.9	5 13 31.0
12.0	132 11 25.1	1 8 29.9	12.0	184 55 50.1	3 25 41.5	12.0	238 30 21.5	5 13 6.8
12.5	139 11 41.0	+0 30 46.7	12.5	192 13 52.0	3 54 41.8	12.5	245 35 10.5	5 7 55.6
13.0	146 14 5.7	-0 7 38.2	13.0	199 30 16.8	4 19 47.8	13.0	252 34 11.5	4 58 13.5
13.5	153 18 14.4	-0 46 7.3	13.5	206 44 30.5	-4 40 37.0	13.5	259 27 22.0	-4 44 19.9
14.0	160 23 43.0	1 24 2.3	14.0	213 56 3.6	4 56 53.0	14.0	266 14 46.5	4 26 37.2
14.5	167 30 8.7	2 0 45.1	14.5	221 4 32.0	5 8 25.7	14.5	272 56 35.6	4 5 29.3
15.0	174 37 10.3	2 35 39.3	15.0	228 9 36.7	5 15 10.4	15.0	279 33 4.8	3 41 20.8
15.5	181 44 28.3	3 8 10.3	15.5	235 11 3.5	5 17 8.3	15.5	286 4 32.8	3 14 37.0
16.0	188 51 44.7	-3 37 46.2	16.0	242 8 42.8	-5 14 24.8	16.0	292 31 20.7	-2 45 43.3
16.5	195 58 42.5	4 3 58.8	16.5	249 2 28.4	5 7 10.0	16.5	298 53 51.1	2 15 4.7
17.0	203 5 5.9	4 26 23.9	17.0	255 52 18.0	4 55 37.7	17.0	305 12 26.8	1 43 6.2
17.5	210 10 39.5	4 44 41.5	17.5	262 38 11.8	4 40 4.5	17.5	311 27 30.5	1 10 11.9
18.0	217 15 7.9	4 58 36.1	18.0	269 20 11.9	4 20 49.7	18.0	317 39 24.1	0 36 45.5
18.5	224 18 15.9	-5 7 57.2	18.5	275 58 22.2	-3 58 14.8	18.5	323 48 28.4	-0 3 10.0
19.0	231 19 47.9	5 12 39.0	19.0	282 32 48.1	3 32 43.1	19.0	329 55 3.0	+0 30 12.2
19.5	238 19 27.7	5 12 40.6	19.5	289 3 35.5	3 4 39.0	19.5	335 59 25.8	1 2 59.7
20.0	245 16 58.8	5 8 5.6	20.0	295 30 50.9	2 34 27.9	20.0	342 1 53.7	1 34 52.1
20.5	252 12 4.3	4 59 2.4	20.5	301 54 41.2	2 2 35.5	20.5	348 2 41.9	2 5 29.8
21.0	259 4 27.8	-4 45 43.8	21.0	308 15 13.9	-1 29 28.1	21.0	354 2 4.6	+2 34 34.7
21.5	265 53 52.9	4 28 26.4	21.5	314 32 36.8	0 55 31.6	21.5	0 0 15.3	3 1 49.7
22.0	272 40 4.3	4 7 30.2	22.0	320 46 58.1	-0 21 11.4	22.0	5 57 27.1	3 26 58.9
22.5	279 22 48.1	3 43 18.1	22.5	326 58 26.7	+0 13 7.8	22.5	11 53 52.8	3 49 48.0
23.0	286 1 52.1	3 16 15.5	23.0	333 7 12.2	0 47 2.3	23.0	17 49 45.2	4 10 4.3
23.5	292 37 6.6	-2 46 49.5	23.5	339 13 25.4	+1 20 9.8	23.5	23 45 18.0	+4 27 36.4
24.0	299 8 24.9	2 15 27.9	24.0	345 17 18.1	1 52 9.3	24.0	29 40 45.6	4 42 14.4
24.5	305 35 43.4	1 42 39.1	24.5	351 19 3.5	2 22 41.4	24.5	35 36 23.7	4 53 50.0
25.0	311 59 1.8	1 8 51.0	25.0	357 18 56.4	2 51 28.5	25.0	41 32 29.5	5 2 16.1
25.5	318 18 23.4	0 34 31.0	25.5	3 17 13.2	3 18 14.3	25.5	47 29 22.1	5 7 27.0
26.0	324 33 55.2	-0 0 5.0	26.0	9 14 12.3	+3 42 44.3	26.0	53 27 22.4	+5 9 18.4
26.5	330 45 48.2	+0 34 2.3	26.5	15 10 14.0	4 4 45.6	26.5	59 26 53.4	5 7 47.2
27.0	336 54 16.4	1 7 28.1	27.0	21 5 40.3	4 24 6.7	27.0	65 28 20.1	5 2 51.6
27.5	342 59 37.5	1 39 51.6	27.5	27 0 55.5	4 40 37.4	27.5	71 32 9.7	4 54 31.0
28.0	349 2 12.5	2 10 53.7	28.0	32 56 25.6	4 54 8.7	28.0	77 38 51.0	4 42 46.1
28.5	355 2 25.1	2 40 17.0	28.5	38 52 38.5	5 4 32.4	28.5	83 48 54.6	4 27 38.8
29.0	1 0 41.9	+3 7 45.9	29.0	44 50 4.0	+5 11 41.6	29.0	90 2 52.0	+4 9 12.5
29.5	6 57 31.6	3 33 6.2	29.5	50 49 13.1	5 15 30.3	29.5	96 21 15.2	3 47 32.4
30.0	12 53 25.0	3 56 5.2	30.0	56 50 38.0	5 15 52.7	30.0	102 44 36.1	3 22 45.7
30.5	18 48 54.9	4 16 31.0	30.5	62 54 51.5	5 12 44.6	30.5	109 13 25.9	2 55 2.8
31.0	24 44 34.9	4 34 12.8	31.0	69 2 27.2	5 6 2.3	31.0	115 48 13.2	2 24 36.7
31.5	30 40 59.8	+4 49 0.6	31.5	75 13 58.2	+4 55 43.7	31.5	122 29 23.2	+1 51 43.5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		Day of Month.	NOVEMBER.		Day of Month.	DECEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	115° 48' 13.2	+2° 24' 36.7	1.0	166° 10' 34.7	-2° 7' 51.4	1.0	204° 41' 14.0	-4° 38' 10.2
1.5	122 29 23.2	1 51 43.5	1.5	173 26 20.8	2 41 26.7	1.5	212 6 32.8	4 51 11.9
2.0	129 17 16.4	1 16 43.9	2.0	180 48 13.7	3 12 47.1	2.0	219 34 34.1	4 59 20.9
2.5	136 12 7.0	0 40 2.8	2.5	188 15 36.1	3 41 11.8	2.5	227 4 15.6	5 2 23.6
3.0	143 14 0.6	+0 2 9.7	3.0	195 47 37.2	4 6 1.9	3.0	234 34 28.0	5 0 14.0
3.5	150 22 53.2	-0 36 20.8	3.5	203 23 13.2	-4 26 41.7	3.5	242 3 58.5	-4 52 54.7
4.0	157 38 29.6	1 14 49.7	4.0	211 1 9.6	4 42 41.4	4.0	249 31 33.6	4 40 36.4
4.5	165 0 22.1	1 52 34.6	4.5	218 40 3.5	4 53 38.6	4.5	256 56 2.0	4 23 38.2
5.0	172 27 50.0	2 28 50.0	5.0	226 18 28.0	4 59 19.3	5.0	264 16 18.9	4 2 25.5
5.5	179 59 59.7	3 2 50.2	5.5	233 54 55.8	4 59 39.3	5.5	271 31 28.0	3 37 29.2
6.0	187 35 46.2	-3 33 50.1	6.0	241 28 3.9	-4 54 43.6	6.0	278 40 43.7	-3 9 23.9
6.5	195 13 54.8	4 1 8.3	6.5	248 56 36.8	4 44 46.1	6.5	285 43 31.8	2 38 46.1
7.0	202 53 3.7	4 24 8.8	7.0	256 19 30.6	4 30 8.4	7.0	292 39 30.2	2 6 12.9
7.5	210 31 48.1	4 42 22.9	7.5	263 35 54.2	4 11 17.6	7.5	299 28 28.8	1 32 20.1
8.0	218 8 44.1	4 55 31.0	8.0	270 45 10.9	3 48 44.9	8.0	306 10 28.3	0 57 41.9
8.5	225 42 31.5	-5 3 22.3	8.5	277 46 58.2	-3 23 3.9	8.5	312 45 29.2	-0 22 49.6
9.0	233 11 59.0	5 5 55.7	9.0	284 41 7.7	2 54 48.7	9.0	319 14 20.2	+0 11 48.5
9.5	240 36 5.8	5 3 18.6	9.5	291 27 42.8	2 24 33.0	9.5	325 36 56.8	0 45 47.1
10.0	247 54 3.6	4 55 45.7	10.0	298 6 57.5	1 52 48.9	10.0	331 53 59.9	1 18 43.8
10.5	255 5 17.7	4 43 37.6	10.5	304 39 14.4	1 20 6.5	10.5	338 6 4.2	1 50 19.0
11.0	262 9 27.1	-4 27 19.4	11.0	311 5 2.7	-0 46 53.5	11.0	344 13 47.3	+2 20 15.8
11.5	269 6 23.1	4 7 18.6	11.5	317 24 56.4	-0 13 35.1	11.5	350 17 48.3	2 48 19.1
12.0	275 56 8.3	3 44 4.4	12.0	323 39 32.9	+0 19 25.6	12.0	356 18 46.8	3 14 15.5
12.5	282 38 55.3	3 18 6.3	12.5	329 49 31.3	0 51 47.9	12.5	2 17 22.5	3 37 53.4
13.0	289 15 3.6	2 49 53.2	13.0	335 55 31.2	1 23 12.8	13.0	8 14 14.3	3 59 2.0
13.5	295 44 59.3	-2 19 53.0	13.5	341 58 12.3	+1 53 23.2	13.5	14 9 59.5	+4 17 31.5
14.0	302 9 12.3	1 48 32.7	14.0	347 58 13.0	2 22 3.1	14.0	20 5 13.6	4 33 12.9
14.5	308 28 15.2	1 16 17.6	14.5	353 56 9.8	2 48 57.8	14.5	26 0 30.1	4 45 58.2
15.0	314 42 42.3	0 43 31.5	15.0	359 52 37.1	3 13 53.5	15.0	31 56 19.5	4 55 39.7
15.5	320 53 7.9	-0 10 36.9	15.5	5 48 6.7	3 36 37.5	15.5	37 53 9.4	5 2 10.8
16.0	327 0 5.5	+0 22 5.2	16.0	11 43 7.3	+3 56 57.7	16.0	43 51 24.3	+5 5 25.8
16.5	333 4 7.8	0 54 14.5	16.5	17 38 4.9	4 14 42.9	16.5	49 51 25.5	5 5 19.9
17.0	339 5 45.3	1 25 32.0	17.0	23 33 22.0	4 29 42.6	17.0	55 53 31.0	5 1 49.8
17.5	345 5 26.3	1 55 40.0	17.5	29 29 17.8	4 41 47.4	17.5	61 57 55.5	4 54 53.8
18.0	351 3 36.5	2 24 21.2	18.0	35 26 9.3	4 50 49.2	18.0	68 4 50.3	4 44 32.1
18.5	357 0 39.2	+2 51 19.4	18.5	41 24 9.9	+4 56 41.0	18.5	74 14 23.8	+4 30 47.0
19.0	2 56 55.0	3 16 19.6	19.0	47 23 30.8	4 59 17.1	19.0	80 26 41.9	4 13 43.1
19.5	8 52 42.0	3 39 7.4	19.5	53 24 21.2	4 58 33.5	19.5	86 41 48.1	3 53 27.7
20.0	14 48 16.1	3 59 29.6	20.0	59 26 48.7	4 54 28.2	20.0	92 59 44.2	3 30 11.0
20.5	20 43 51.1	4 17 14.4	20.5	65 30 59.4	4 47 0.8	20.5	99 20 30.4	3 4 5.7
21.0	26 39 39.2	+4 32 10.9	21.0	71 36 59.1	+4 36 13.3	21.0	105 44 5.8	+2 35 27.8
21.5	32 35 51.4	4 44 9.8	21.5	77 44 53.4	4 22 9.7	21.5	112 10 30.3	2 4 35.9
22.0	38 32 37.8	4 53 3.4	22.0	83 54 48.5	4 4 56.3	22.0	118 39 43.0	1 31 51.1
22.5	44 30 8.4	4 58 45.3	22.5	90 6 51.5	3 44 41.4	22.5	125 11 44.0	0 57 37.2
23.0	50 28 33.2	5 1 10.9	23.0	96 21 11.2	3 21 35.7	23.0	131 46 34.3	+0 22 19.9
23.5	56 28 3.0	+5 0 17.2	23.5	102 37 57.9	+2 55 52.0	23.5	138 24 16.0	-0 13 33.0
24.0	62 28 49.6	4 56 2.9	24.0	108 57 24.1	2 27 45.4	24.0	145 4 52.4	0 49 32.5
24.5	68 31 6.5	4 48 28.5	24.5	115 19 44.6	1 57 32.9	24.5	151 48 27.6	1 25 8.4
25.0	74 35 8.8	4 37 36.1	25.0	121 45 16.1	1 25 33.5	25.0	158 35 6.3	1 59 49.9
25.5	80 41 14.1	4 23 29.2	25.5	128 14 17.2	0 52 8.4	25.5	165 24 53.2	2 33 5.7
26.0	86 49 42.3	+4 6 13.4	26.0	134 47 7.8	+0 17 40.7	26.0	172 17 52.4	-3 4 24.7
26.5	93 0 55.6	3 45 55.8	26.5	141 24 8.3	-0 17 24.6	26.5	179 14 6.5	3 33 16.2
27.0	99 15 18.3	3 22 45.4	27.0	148 5 38.9	0 52 40.2	27.0	186 13 35.3	3 59 10.8
27.5	105 33 17.0	2 56 52.7	27.5	154 51 58.3	1 27 37.2	27.5	193 16 15.4	4 21 40.6
28.0	111 55 19.4	2 28 30.8	28.0	161 43 22.5	2 1 44.6	28.0	200 21 59.2	4 40 20.1
28.5	118 21 54.3	1 57 54.7	28.5	168 40 3.4	2 34 30.0	28.5	207 30 33.6	4 54 46.6
29.0	124 53 30.7	+1 25 22.1	29.0	175 42 6.7	-3 5 19.8	29.0	214 41 39.7	-5 4 41.3
29.5	131 30 36.6	0 51 13.3	29.5	182 49 31.0	3 33 39.9	29.5	221 54 52.3	5 9 49.8
30.0	138 13 37.5	+0 15 52.0	30.0	190 2 5.9	3 58 56.3	30.0	229 9 40.1	5 10 3.1
30.5	145 2 55.2	-0 20 15.0	30.5	197 19 30.7	4 20 36.4	30.5	236 25 25.9	5 5 18.2
31.0	151 58 46.1	0 56 37.6	31.0	204 41 14.0	4 38 10.2	31.0	243 41 27.4	4 55 38.6
31.5	159 1 19.4	-1 32 41.9	31.5	212 6 32.8	-4 51 11.9	31.5	250 56 58.6	-4 41 14.0

GREENWICH MEAN TIME.						
Date.	THE MOON'S EQUATOR.				Mean Solar Days.	Motion of ζ .
	i Inclination to the Earth's Equator.	\wedge Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	\oslash Ascending Node on Earth's Equator.	ζ Mean Longitude of the Moon.		
Jan. 1	22 6.3	155 2.8	1 34.1	112 54.2	0.1	1 19.06
11	22 6.6	154 29.3	1 36.0	244 40.0	0.2	2 38.12
21	22 7.0	153 55.7	1 38.0	16 25.9	0.3	3 57.18
31	22 7.3	153 22.2	1 39.9	148 11.7	0.4	5 16.23
Feb. 10	22 7.7	152 48.6	1 41.9	279 57.5	0.5	6 35.29
20	22 8.1	152 15.0	1 43.9	51 43.4	0.6	7 54.35
March 1	22 8.5	151 41.5	1 45.8	183 29.2	0.7	9 13.41
11	22 8.9	151 8.0	1 47.7	315 15.0	0.8	10 32.47
21	22 9.4	150 34.4	1 49.6	87 0.9	0.9	11 51.53
31	22 9.8	150 0.9	1 51.5	218 46.7	1.0	13 10.58
April 10	22 10.1	149 27.4	1 53.4	350 32.5	2.0	26 21.17
20	22 10.5	148 53.9	1 55.2	122 18.4	3.0	39 31.75
30	22 10.9	148 20.5	1 57.1	254 4.2	4.0	52 42.33
May 10	22 11.3	147 47.0	1 58.9	25 50.1	5.0	65 52.92
20	22 11.7	147 13.6	2 0.8	157 35.9	6.0	79 3.50
30	22 12.2	146 40.1	2 2.6	289 21.7	7.0	92 14.09
June 9	22 12.7	146 6.7	2 4.4	61 7.6	8.0	105 24.67
19	22 13.2	145 33.3	2 6.2	192 53.4	9.0	118 35.25
29	22 13.7	144 59.8	2 8.0	324 39.2	10.0	131 45.84
July 9	22 14.2	144 26.4	2 9.8	96 25.1	Hours	0 32.94
19	22 14.6	143 53.0	2 11.5	228 10.9	1	1 5.88
29	22 15.1	143 19.6	2 13.2	359 56.7	2	1 38.82
Aug. 8	22 15.6	142 46.3	2 14.9	131 42.6	3	2 11.76
18	22 16.1	142 12.9	2 16.6	263 28.4	4	2 44.70
28	22 16.6	141 39.6	2 18.3	35 14.3	5	3 17.65
Sept. 7	22 17.1	141 6.2	2 20.1	167 0.1	6	3 50.59
17	22 17.6	140 32.9	2 21.8	298 45.9	7	4 23.53
27	22 18.2	139 59.6	2 23.4	70 31.8	8	4 56.47
Oct. 7	22 18.7	139 26.3	2 25.1	202 17.6	9	5 29.41
17	22 19.3	138 53.0	2 26.7	334 3.4	10	6 2.35
27	22 19.8	138 19.7	2 28.4	105 49.3	11	6 35.29
Nov. 6	22 20.3	137 46.5	2 30.0	237 35.1	12	7 8.23
16	22 20.9	137 13.3	2 31.5	9 20.9	13	7 41.17
26	22 21.4	136 40.1	2 33.1	141 6.8	14	8 14.11
Dec. 6	22 22.0	136 6.9	2 34.6	272 52.6	15	8 47.06
16	22 22.5	135 33.7	2 36.2	44 38.5	16	9 20.00
26	22 23.1	135 0.5	2 37.7	176 24.3	17	9 52.94
36	22 23.7	134 27.3	2 39.2	308 10.1	18	10 25.88
					19	10 58.82
					20	11 31.76
					21	12 4.70
					22	12 37.64
					23	

TABLE FOR THE LIBRATION OF THE MOON.

Argument, $(\Omega - \lambda)$ or $(\Omega - \lambda - 180^\circ)$.

$\Omega - \lambda$	$\Delta \lambda$	$\frac{1}{a}$	B		$\Omega - \lambda$	$\Delta \lambda$	$\frac{1}{a}$	B	
•	•	•	•	•	•	•	•	•	•
0	0.0	39	0 0.0	180	46	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	535	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					
	$\Delta \lambda$	$\frac{1}{a}$	B	$\Omega - \lambda$		$\Delta \lambda$	$\frac{1}{a}$	B	$\Omega - \lambda$

 $\Delta \lambda$ has the sign of $\tan (\lambda - \Omega)$ a has the sign of $\cos (\Omega - \lambda)$ B has the sign of $\sin (\Omega - \lambda)$

FOR GREENWICH MEAN NOON.									
Date.		Apparent Obliquity of the Ecliptic. (HANSEN.)	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.	
			In Longitude.	In R. A.		Aberration.	Hor. Par.		
Jan.	1	23 27 17.81	+ 7.21	+ 0.441	0.00	- 20.79	9.00	336 29.6	
	11	17.87	7.74	0.473	1.38	20.79	9.00	335 57.8	
	21	17.96	8.15	0.498	2.75	20.77	8.99	335 26.1	
	31	18.10	8.42	0.516	4.13	20.75	8.98	334 54.3	
Feb.	10	18.25	8.55	0.523	5.50	20.71	8.96	334 22.5	
	20	23 27 18.38	+ 8.53	+ 0.522	6.88	- 20.67	8.94	333 50.7	
March	1	18.46	8.37	0.512	8.26	20.62	8.92	333 19.0	
	11	18.50	8.13	0.497	9.63	20.57	8.90	332 47.2	
	21	18.47	7.84	0.480	11.01	20.51	8.88	332 15.4	
	31	18.38	7.56	0.462	12.38	20.45	8.85	331 43.7	
April	10	23 27 18.22	+ 7.35	+ 0.450	13.76	- 20.39	8.82	331 11.9	
	20	18.02	7.22	0.442	15.14	20.33	8.80	330 40.1	
	30	17.80	7.23	0.442	16.51	20.28	8.78	330 8.3	
May	10	17.56	7.38	0.451	17.89	20.23	8.76	329 36.6	
	20	17.35	7.65	0.468	19.26	20.19	8.74	329 4.8	
	30	23 27 17.15	+ 8.05	+ 0.492	20.64	- 20.16	8.72	328 33.0	
June	9	17.01	8.54	0.522	22.02	20.13	8.71	328 1.2	
	19	16.91	9.07	0.555	23.39	20.12	8.71	327 29.5	
	29	16.88	9.61	0.588	24.77	20.11	8.70	326 57.7	
July	9	16.90	10.10	0.618	26.14	20.11	8.70	326 25.9	
	19	23 27 16.95	+ 10.53	+ 0.644	27.52	- 20.12	8.71	325 54.2	
	29	17.04	10.83	0.662	28.90	20.14	8.72	325 22.4	
Aug.	8	17.17	11.01	0.673	30.27	20.17	8.73	324 50.6	
	18	17.29	11.06	0.676	31.65	20.21	8.75	324 18.8	
	28	17.39	10.97	0.671	33.02	20.25	8.77	323 47.1	
Sept.	7	23 27 17.44	+ 10.77	+ 0.659	34.40	- 20.30	8.79	323 15.3	
	17	17.44	10.51	0.642	35.78	20.36	8.81	322 43.5	
	27	17.37	10.21	0.624	37.15	20.41	8.83	322 11.7	
Oct.	7	17.23	9.94	0.608	38.53	20.47	8.86	321 40.0	
	17	17.05	9.72	0.594	39.90	20.53	8.89	321 8.2	
	27	23 27 16.83	+ 9.61	+ 0.588	41.28	- 20.59	8.91	320 36.4	
Nov.	6	16.58	9.66	0.591	42.66	20.64	8.93	320 4.7	
	16	16.33	9.86	0.603	44.03	20.69	8.95	319 32.9	
	26	16.11	10.21	0.624	45.41	20.73	8.97	319 1.1	
Dec.	6	15.91	10.65	0.651	46.78	20.76	8.98	318 29.3	
	16	23 27 15.79	+ 11.18	+ 0.684	48.16	- 20.78	8.99	317 57.6	
	26	15.72	11.75	0.719	49.54	20.79	9.00	317 25.8	
	36	23 27 15.72	+ 12.28	+ 0.751	50.91	- 20.79	9.00	316 54.0	
Mean Obliquity, 1896.0, 23° 27' 9".89 (HANSEN).									Daily Motion of ☾ -3'.177
Mean Obliquity, 1896.0, 23° 27' 9".62 (PETERS).									
Precession for 1896					50".2629	log 1.70125			
Precession in a Solar Day					0".1373	log 9.13777			
Precession in a Sidereal Day					0".1370	log 9.13658			
Sun's Mean Equatorial Horizontal Parallax					8".848	log 0.94685			

PART II

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF PETERS AND STRUVE.

NOTATION.

τ , the time, reckoned in units of one year, from the beginning of the Besselian fictitious year, (1895,

December 31^d.133 = 1896, January 0^d.133, Washington mean time),

a_0, δ_0 , the star's mean right ascension and declination at the beginning of the fictitious year,

α, δ , the star's apparent right ascension and declination at the time τ ,

μ, μ' , the annual proper motion in right ascension and declination,

$\mu \odot$, the sun's true longitude,

Ω , the longitude of the moon's ascending node,

ω , the obliquity of the ecliptic,

Γ , the longitude of the sun's perigee,

Γ' , the longitude of the moon's perigee.

ζ , the moon's mean longitude

BESSELIAN STAR-NUMBER

$$\begin{aligned} A = & \tau - 0.34249 \sin \Omega & - 0.00011 \sin (3 \odot - \Gamma) \\ & + 0.00410 \sin 2 \Omega & - 0.00005 \sin 2 (\odot - \Omega) \\ & - 0.02521 \sin 2 \odot & + 0.00010 \sin 2 (\odot - \Gamma') \\ & + 0.00293 \sin (\odot + 82^\circ 4') & + 0.00009 \sin (2 \Gamma' - \Omega) \\ & + 0.00025 \sin (2 \odot - \Omega) & + 0.00005 \cos \Gamma' \\ & - 0.00405 \sin 2 \zeta & + 0.00004 \sin 2 \Gamma' \\ & + 0.00135 \sin (\zeta - \Gamma') \end{aligned}$$

$$\begin{aligned} B = & - 9.2239 \cos \Omega & - 0.0027 \cos (3 \odot - \Gamma) \\ & + 0.0895 \cos 2 \Omega & + 0.0067 \cos (2 \odot - \Omega) \\ & - 0.5506 \cos 2 \odot & + 0.0024 \cos (2 \Gamma' - \Omega) \\ & - 0.0092 \cos (\odot + 281^\circ 3') & - 0.0023 \sin \Gamma' \\ & - 0.0886 \cos 2 \zeta & + 0.0008 \cos 2 \Gamma' \end{aligned}$$

$$C = - 20.4451 \cos \omega \cos \odot$$

$$D = - 20.4451 \sin \odot$$

$$E = - 0.0461 \sin \Omega + 0''.0014 \sin 2 \Omega - 0''.0033 \sin 2 \odot$$

BESSEL'S Star-Constants.

$$a = 3''.07263 + 1''.33683 \sin a_0 \tan \delta_0 = \text{precession in right ascension}$$

$$b = \frac{1}{18} \cos a_0 \tan \delta_0$$

$$c = \frac{1}{18} \cos a_0 \sec \delta_0$$

$$d = \frac{1}{18} \sin a_0 \sec \delta_0$$

$$a' = 20''.0525 \cos a_0 = \text{precession in declination}$$

$$b' = - \sin a_0$$

$$c' = \tan \omega \cos \delta_0 - \sin a_0 \sin \delta_0$$

$$d' = \cos a_0 \sin \delta_0$$

Reduction to Apparent Position.

$$a = a_0 + \tau \mu + A a + B b + C c + D d + \frac{1}{18} E \quad (\text{in time})$$

$$\delta = \delta_0 + \tau \mu' + A a' + B b' + C c' + D d' \quad (\text{in arc})$$

INDEPENDENT STAR-NUMBERS.

$$f = 46''.0894 A + E \text{ (in arc)} = 3''.07263 A + \frac{1}{18} E \quad (\text{in time})$$

$$g \sin G = B \quad h \sin H = C$$

$$g \cos G = 20''.0525 A \quad h \cos H = D \quad i = C \tan \omega$$

Reduction to Apparent Position.

$$a = a_0 + f + \tau \mu + \frac{1}{18} g \sin (G + a_0) \tan \delta_0 + \frac{1}{18} h \sin (H + a_0) \sec \delta_0 \quad (\text{in time})$$

$$\delta = \delta_0 + \tau \mu' + g \cos (G + a_0) + h \cos (H + a_0) \sin \delta_0 + i \cos \delta_0 \quad (\text{in arc})$$

NOTE.—(1) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when BESSEL'S star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(2) In using the star-constants of the *British Association Catalogue*, $a, b, c, d, a', b', c', d'$, must be changed to $c, d, a, b, -c', -d', -a', -b'$, respectively.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Jan. 0	+9.1608	-0.8923	-0.5274	+1.3035	Feb. 15	+9.4761	-0.9319	-1.1971	+1.0458
1	9.1762	0.8943	0.5677	1.3020	16	9.4768	0.9325	1.2019	1.0339
2	9.1892	0.8968	0.6044	1.3004	17	9.4779	0.9322	1.2066	1.0214
3	9.1995	0.8992	0.6382	1.2987	18	9.4799	0.9312	1.2111	1.0084
4	9.2075	0.9012	0.6693	1.2968	(10.0) 19	9.4829	0.9298	1.2154	0.9948
b (7.0) 5	+9.2140	-0.9024	-0.6983	+1.2947	20	+9.4872	-0.9285	-1.2195	+0.9806
6	9.2201	0.9027	0.7254	1.2924	21	9.4925	0.9277	1.2235	0.9658
7	9.2265	0.9020	0.7505	1.2900	22	9.4984	0.9276	1.2273	0.9504
8	9.2342	0.9006	0.7745	1.2875	23	9.5043	0.9285	1.2309	0.9343
9	9.2434	0.8989	0.7969	1.2848	24	9.5098	0.9303	1.2343	0.9175
10	+9.2545	-0.8974	-0.8181	+1.2820	25	+9.5144	-0.9326	-1.2376	+0.8999
11	9.2667	0.8963	0.8383	1.2791	26	9.5181	0.9351	1.2407	0.8814
12	9.2794	0.8962	0.8575	1.2760	27	9.5206	0.9375	1.2436	0.8619
13	9.2917	0.8971	0.8757	1.2727	28	9.5223	0.9392	1.2464	0.8414
14	9.3029	0.8989	0.8930	1.2692	29	9.5234	0.9401	1.2491	0.8198
15	+9.3122	-0.9015	-0.9094	+1.2656	Mar. 1	+9.5245	-0.9401	-1.2517	+0.7968
16	9.3195	0.9044	0.9248	1.2618	2	9.5260	0.9392	1.2542	0.7725
17	9.3249	0.9070	0.9397	1.2579	3	9.5282	0.9377	1.2565	0.7465
18	9.3287	0.9091	0.9541	1.2538	4	9.5315	0.9360	1.2586	0.7189
19	9.3316	0.9104	0.9680	1.2495	5	9.5357	0.9345	1.2605	0.6892
b (8.0) 20	+9.3344	-0.9107	-0.9813	+1.2450	(11.0) 6	+9.5405	-0.9335	-1.2621	+0.6572
21	9.3380	0.9101	0.9941	1.2403	7	9.5456	0.9334	1.2637	0.6225
22	9.3428	0.9089	1.0064	1.2355	8	9.5504	0.9342	1.2652	0.5847
23	9.3492	0.9075	1.0182	1.2305	9	9.5546	0.9358	1.2666	0.5432
24	9.3571	0.9064	1.0295	1.2252	10	9.5578	0.9378	1.2679	0.4972
25	+9.3661	-0.9059	-1.0403	+1.2197	11	+9.5599	-0.9399	-1.2690	+0.4456
26	9.3757	0.9064	1.0507	1.2140	12	9.5611	0.9417	1.2700	0.3870
27	9.3850	0.9079	1.0607	1.2081	13	9.5614	0.9428	1.2709	0.3190
28	9.3935	0.9102	1.0704	1.2020	14	9.5614	0.9429	1.2716	0.2383
29	9.4006	0.9130	1.0798	1.1957	15	9.5616	0.9422	1.2721	0.1390
30	+9.4062	-0.9160	-1.0888	+1.1892	16	+9.5623	-0.9406	-1.2726	+0.0099
31	9.4104	0.9186	1.0975	1.1824	17	9.5640	0.9385	1.2730	9.8247
Feb. 1	9.4135	0.9206	1.1059	1.1754	18	9.5667	0.9364	1.2732	+9.4968
2	9.4162	0.9216	1.1140	1.1681	19	9.5704	0.9346	1.2732	-8.5783
3	9.4189	0.9217	1.1219	1.1606	20	9.5747	0.9335	1.2731	9.5956
b (9.0) 4	+9.4223	-0.9210	-1.1296	+1.1528	(12.0) 21	+9.5792	-0.9332	-1.2728	-9.8740
5	9.4268	0.9198	1.1370	1.1447	22	9.5837	0.9339	1.2724	0.0421
6	9.4324	0.9185	1.1441	1.1363	23	9.5876	0.9352	1.2719	0.1626
7	9.4390	0.9177	1.1509	1.1276	24	9.5906	0.9368	1.2713	0.2577
8	9.4462	0.9175	1.1575	1.1186	25	9.5927	0.9384	1.2706	0.3338
9	+9.4535	-0.9183	-1.1638	+1.1093	26	+9.5941	-0.9395	-1.2698	-0.3992
10	9.4602	0.9200	1.1698	1.0997	27	9.5949	0.9398	1.2688	0.4558
11	9.4659	0.9225	1.1756	1.0897	28	9.5956	0.9392	1.2676	0.5059
12	9.4703	0.9253	1.1813	1.0793	29	9.5967	0.9377	1.2664	0.5505
13	9.4733	0.9281	1.1868	1.0685	30	9.5983	0.9355	1.2651	0.5909
14	+9.4751	-0.9304	-1.1921	+1.0573	31	+9.6007	-0.9329	-1.2636	-0.6277
15	+9.4761	-0.9319	-1.1971	+1.0458	Apr. 1	+9.6039	-0.9304	-1.2620	-0.6615

E = + 0".01.

E = + 0".02.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Apr. 1	+9.6039	-0.9304	-1.2620	-0.6615	May 17	+9.7262	-0.8825	-1.0009	-1.2377
2	9.6079	0.9283	1.2602	0.6927	18	9.7292	0.8836	0.9891	1.2422
3	9.6123	0.9270	1.2583	0.7217	19	9.7314	0.8845	0.9768	1.2465
h 4	9.6166	0.9266	1.2562	0.7487	h 20	9.7333	0.8848	0.9640	1.2507
(13.0) 5	9.6204	0.9271	1.2540	0.7740	(18.0) 21	9.7348	0.8842	0.9507	1.2548
6	+9.6236	-0.9282	-1.2517	-0.7978	22	+9.7363	-0.8826	-0.9369	-1.2587
7	9.6258	0.9295	1.2492	0.8202	23	9.7382	0.8800	0.9226	1.2624
8	9.6272	0.9305	1.2466	0.8414	24	9.7406	0.8768	0.9077	1.2659
9	9.6278	0.9310	1.2438	0.8614	25	9.7436	0.8735	0.8923	1.2693
10	9.6281	0.9307	1.2409	0.8805	26	9.7471	0.8703	0.8763	1.2726
11	+9.6284	-0.9293	-1.2379	-0.8987	27	+9.7512	-0.8680	-0.8594	-1.2758
12	9.6291	0.9271	1.2347	0.9160	28	9.7554	0.8666	0.8416	1.2788
13	9.6305	0.9243	1.2314	0.9325	29	9.7594	0.8663	0.8228	1.2816
14	9.6329	0.9212	1.2279	0.9482	30	9.7631	0.8670	0.8030	1.2841
15	9.6361	0.9184	1.2242	0.9632	31	9.7661	0.8683	0.7823	1.2865
16	+9.6399	-0.9162	-1.2203	-0.9776	June 1	+9.7685	-0.8698	-0.7604	-1.2889
17	9.6442	0.9148	1.2163	0.9914	2	9.7702	0.8709	0.7372	1.2912
18	9.6485	0.9144	1.2122	1.0047	3	9.7716	0.8712	0.7127	1.2934
h 19	9.6523	0.9148	1.2080	1.0175	h 4	9.7727	0.8706	0.6865	1.2955
(14.0) 20	9.6556	0.9158	1.2036	1.0297	(17.0) 5	9.7739	0.8689	0.6585	1.2974
21	+9.6581	-0.9168	-1.1990	-1.0414	6	+9.7755	-0.8664	-0.6285	-1.2991
22	9.6599	0.9175	1.1942	1.0527	7	9.7776	0.8633	0.5963	1.3007
23	9.6612	0.9175	1.1892	1.0636	8	9.7804	0.8603	0.5611	1.3022
24	9.6623	0.9164	1.1840	1.0742	9	9.7839	0.8577	0.5228	1.3036
25	9.6635	0.9145	1.1786	1.0844	10	9.7877	0.8560	0.4806	1.3049
26	+9.6652	-0.9117	-1.1731	-1.0943	11	+9.7916	-0.8555	-0.4337	-1.3060
27	9.6676	0.9085	1.1674	1.1038	12	9.7954	0.8560	0.3812	1.3070
28	9.6707	0.9052	1.1615	1.1129	13	9.7989	0.8574	0.3222	1.3079
29	9.6745	0.9022	1.1553	1.1217	14	9.8017	0.8593	0.2515	1.3086
30	9.6787	0.9000	1.1489	1.1301	15	9.8040	0.8612	0.1690	1.3092
May 1	+9.6831	-0.8988	-1.1423	-1.1382	16	+9.8060	-0.8625	-0.0647	-1.3097
2	9.6871	0.8985	1.1355	1.1461	17	9.8076	0.8630	0.9280	1.3101
3	9.6906	0.8990	1.1285	1.1538	18	9.8091	0.8625	0.7297	1.3104
4	9.6934	0.8999	1.1213	1.1613	h 19	9.8108	0.8609	-0.3507	1.3106
h 5	9.6954	0.9008	1.1138	1.1685	(18.0) 20	9.8129	0.8586	+0.9284	1.3106
(15.0) 6	+9.6968	-0.9013	-1.1061	-1.1754	21	+9.8155	-0.8559	+0.6014	-1.3105
7	9.6976	0.9009	1.0981	1.1821	22	9.8185	0.8534	0.8522	1.3103
8	9.6985	0.8994	1.0898	1.1886	23	9.8220	0.8516	0.0101	1.3100
9	9.6995	0.8971	1.0812	1.1949	24	9.8257	0.8507	0.1254	1.3095
10	9.7011	0.8940	1.0723	1.2009	25	9.8294	0.8510	0.2164	1.3089
11	+9.7035	-0.8905	-1.0631	-1.2067	26	+9.8327	-0.8524	+0.2915	-1.3082
12	9.7066	0.8871	1.0536	1.2123	27	9.8356	0.8545	0.3554	1.3074
13	9.7103	0.8843	1.0437	1.2177	28	9.8379	0.8570	0.4110	1.3065
14	9.7144	0.8824	1.0335	1.2230	29	9.8396	0.8592	0.4601	1.3054
15	9.7187	0.8816	1.0230	1.2281	30	9.8409	0.8608	0.5042	1.3042
16	+9.7227	-0.8817	-1.0122	-1.2330	July 1	+9.8419	-0.8615	+0.5440	-1.3029
17	+9.7262	-0.8825	-1.0009	-1.2377	2	+9.8430	-0.8610	+0.5804	-1.3015

E = + 0°.02.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
July 1	+9.8419	-0.8615	+0.5440	-1.3029	Aug. 16	+9.9259	-0.8806	+1.1853	-1.0721
2	9.8430	0.8610	0.5804	1.3015	17	9.9282	0.8801	1.1903	1.0615
3	9.8443	0.8596	0.6140	1.2999	18	9.9305	0.8805	1.1951	1.0505
h 4	9.8458	0.8576	0.6450	1.2982	h 19	9.9327	0.8821	1.1997	1.0390
(19.0) 5	9.8480	0.8554	0.6737	1.2964	(22.0) 20	9.9347	0.8842	1.2042	1.0272
6	+9.8507	-0.8536	+0.7007	-1.2944	21	+9.9362	-0.8870	+1.2086	-1.0150
7	9.8538	0.8525	0.7259	1.2923	22	9.9373	0.8899	1.2129	1.0024
8	9.8570	0.8525	0.7496	1.2901	23	9.9379	0.8923	1.2170	0.9893
9	9.8603	0.8536	0.7719	1.2878	24	9.9382	0.8940	1.2210	0.9757
10	9.8632	0.8558	0.7931	1.2853	25	9.9384	0.8946	1.2248	0.9614
11	+9.8658	-0.8585	+0.8132	-1.2827	26	+9.9386	-0.8943	+1.2284	-0.9464
12	9.8679	0.8614	0.8322	1.2800	27	9.9390	0.8931	1.2318	0.9307
13	9.8695	0.8638	0.8504	1.2771	28	9.9398	0.8914	1.2350	0.9143
14	9.8708	0.8655	0.8677	1.2741	29	9.9411	0.8897	1.2381	0.8970
15	9.8720	0.8662	0.8843	1.2709	30	9.9427	0.8884	1.2411	0.8790
16	+9.8731	-0.8658	+0.9002	-1.2676	31	+9.9447	-0.8878	+1.2439	-0.8603
17	9.8747	0.8645	0.9154	1.2641	Sept. 1	9.9467	0.8883	1.2466	0.8405
18	9.8765	0.8628	0.9299	1.2605	2	9.9486	0.8897	1.2492	0.8196
19	9.8788	0.8611	0.9437	1.2568	h 3	9.9503	0.8919	1.2517	0.7974
h 20	9.8816	0.8598	0.9570	1.2529	(23.0) 4	9.9515	0.8944	1.2541	0.7739
(20.0) 21	+9.8845	-0.8594	+0.9698	-1.2488	5	+9.9525	-0.8968	+1.2563	-0.7489
22	9.8875	0.8602	0.9822	1.2446	6	9.9531	0.8987	1.2583	0.7222
23	9.8903	0.8620	0.9942	1.2402	7	9.9534	0.8997	1.2601	0.6936
24	9.8928	0.8646	1.0057	1.2357	8	9.9537	0.8997	1.2618	0.6629
25	9.8947	0.8676	1.0168	1.2310	9	9.9541	0.8986	1.2634	0.6297
26	+9.8961	-0.8706	+1.0275	-1.2261	10	+9.9549	-0.8968	+1.2649	-0.5935
27	9.8971	0.8731	1.0378	1.2210	11	9.9560	0.8947	1.2663	0.5540
28	9.8977	0.8747	1.0478	1.2157	12	9.9575	0.8927	1.2676	0.5102
29	9.8983	0.8752	1.0574	1.2101	13	9.9592	0.8912	1.2687	0.4615
30	9.8990	0.8745	1.0667	1.2044	14	9.9612	0.8906	1.2697	0.4064
31	+9.9001	-0.8734	+1.0757	-1.1985	15	+9.9631	-0.8909	+1.2706	-0.3430
Aug. 1	9.9016	0.8719	1.0844	1.1924	16	9.9648	0.8922	1.2713	0.2687
2	9.9034	0.8705	1.0928	1.1862	17	9.9662	0.8940	1.2719	0.1788
3	9.9057	0.8697	1.1009	1.1798	18	9.9672	0.8961	1.2724	0.0648
h 4	9.9082	0.8698	1.1087	1.1732	h 19	9.9677	0.8980	1.2728	9.9097
(21.0) 5	+9.9108	-0.8710	+1.1163	-1.1663	(0.0) 20	+9.9679	-0.8991	+1.2730	-9.6656
6	9.9132	0.8732	1.1237	1.1591	21	9.9678	0.8993	1.2731	-9.0530
7	9.9152	0.8761	1.1309	1.1516	22	9.9679	0.8984	1.2731	+9.3716
8	9.9168	0.8792	1.1377	1.1439	23	9.9681	0.8966	1.2730	9.7673
9	9.9179	0.8820	1.1443	1.1359	24	9.9687	0.8942	1.2727	9.9708
10	+9.9189	-0.8842	+1.1507	-1.1276	25	+9.9696	-0.8916	+1.2723	+0.1093
11	9.9194	0.8854	1.1569	1.1191	26	9.9709	0.8892	1.2718	0.2134
12	9.9202	0.8856	1.1629	1.1103	27	9.9725	0.8875	1.2711	0.2975
13	9.9211	0.8849	1.1688	1.1012	28	9.9743	0.8867	1.2703	0.3679
14	9.9224	0.8835	1.1745	1.0919	29	9.9761	0.8869	1.2694	0.4284
15	+9.9240	-0.8819	+1.1800	-1.0822	30	+9.9777	-0.8879	+1.2683	+0.4814
16	+9.9259	-0.8806	+1.1853	-1.0721	Oct. 1	+9.9789	-0.8894	+1.2671	+0.5285

DOI: 10.1002/for

[illegible]

$$E = +0.03$$

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g .	Log h .	i	Log i .	
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
Jan.	0	0.0010	+ 6.68	+0.445	290 25	19 21.7	350 30	23 22.0	+0.9205	+1.3095	-1.46	-0.1646
	1	0.0037	6.92	0.461	291 0	19 24.0	349 34	23 18.3	0.9241	1.3093	1.60	0.2049
	2	0.0064	7.14	0.476	291 28	19 25.9	348 38	23 14.5	0.9280	1.3091	1.75	0.2418
	3	0.0092	7.31	0.487	291 50	19 27.3	347 41	23 10.7	0.9315	1.3088	1.89	0.2756
	4	0.0119	7.44	0.496	292 6	19 28.4	346 44	23 6.9	0.9343	1.3085	2.03	0.3067
	5	0.0147	+ 7.55	+0.503	292 20	19 29.3	345 47	23 3.1	+0.9363	+1.3082	-2.17	-0.3357
	6	0.0174	7.66	0.511	292 37	19 30.5	344 50	22 59.3	0.9374	1.3079	2.31	0.3628
	7	0.0201	7.77	0.518	292 57	19 31.8	343 53	22 55.5	0.9378	1.3076	2.45	0.3882
	8	0.0229	7.91	0.527	293 23	19 33.5	342 56	22 51.7	0.9378	1.3072	2.59	0.4119
	9	0.0256	8.08	0.539	293 55	19 35.7	341 59	22 47.9	0.9379	1.3068	2.73	0.4344
	10	0.0284	+ 8.29	+0.553	294 32	19 38.1	341 2	22 44.1	+0.9385	+1.3064	-2.86	-0.4556
	11	0.0311	8.53	0.569	295 12	19 40.8	340 5	22 40.3	0.9397	1.3060	2.99	0.4756
	12	0.0338	8.78	0.585	295 51	19 43.4	339 8	22 36.5	0.9420	1.3056	3.13	0.4947
	13	0.0366	9.03	0.602	296 27	19 45.8	338 10	22 32.7	0.9451	1.3052	3.26	0.5129
	14	0.0393	9.26	0.617	296 57	19 47.8	337 13	22 28.9	0.9488	1.3047	3.39	0.5301
	15	0.0421	+ 9.47	+0.631	297 18	19 49.2	336 15	22 25.0	+0.9528	+1.3042	-3.52	-0.5466
	16	0.0448	9.63	0.642	297 33	19 50.2	335 17	22 21.1	0.9567	1.3037	3.65	0.5623
	17	0.0475	9.74	0.649	297 42	19 50.8	334 19	22 17.3	0.9599	1.3032	3.78	0.5773
	18	0.0503	9.83	0.655	297 47	19 51.1	333 21	22 13.4	0.9623	1.3027	3.91	0.5917
	19	0.0530	9.90	0.660	297 53	19 51.5	332 23	22 9.5	0.9641	1.3021	4.04	0.6055
	20	0.0558	+ 9.96	+0.664	298 1	19 52.1	331 25	22 5.6	+0.9648	+1.3015	-4.16	-0.6187
	21	0.0585	10.05	0.670	298 15	19 53.0	330 26	22 1.7	0.9652	1.3010	4.28	0.6314
	22	0.0612	10.16	0.677	298 34	19 54.3	329 27	21 57.8	0.9653	1.3004	4.40	0.6436
	23	0.0640	10.31	0.687	299 1	19 56.0	328 28	21 53.9	0.9657	1.2998	4.52	0.6554
	24	0.0667	10.50	0.700	299 31	19 58.0	327 29	21 49.9	0.9668	1.2992	4.64	0.6668
	25	0.0695	+10.72	+0.715	300 3	20 0.2	326 30	21 46.0	+0.9686	+1.2986	-4.76	-0.6777
	26	0.0722	10.96	0.731	300 35	20 2.3	325 31	21 42.1	0.9715	1.2980	4.88	0.6882
	27	0.0749	11.19	0.746	301 2	20 4.1	324 31	21 38.1	0.9750	1.2974	4.99	0.6984
	28	0.0777	11.42	0.761	301 24	20 5.6	323 31	21 34.1	0.9790	1.2968	5.10	0.7082
	29	0.0804	11.60	0.773	301 39	20 6.6	322 32	21 30.1	0.9829	1.2962	5.21	0.7176
	30	0.0832	+11.75	+0.783	301 48	20 7.2	321 32	21 26.1	+0.9866	+1.2955	-5.32	-0.7266
	31	0.0859	11.87	0.791	301 54	20 7.6	320 32	21 22.1	0.9897	1.2948	5.43	0.7352
Feb.	1	0.0886	11.96	0.797	301 57	20 7.8	319 32	21 18.1	0.9919	1.2941	5.54	0.7435
2	0.0914	12.05	0.803	302 4	20 8.3	318 31	21 14.1	0.9935	1.2935	5.64	0.7516	
3	0.0941	12.11	0.807	302 13	20 8.9	317 31	21 10.1	0.9943	1.2928	5.74	0.7595	
4	0.0969	+12.21	+0.814	302 28	20 9.9	316 31	21 6.1	+0.9948	+1.2922	-5.84	-0.7671	
5	0.0996	12.33	0.822	302 48	20 11.2	315 30	21 2.0	0.9952	1.2915	5.94	0.7745	
6	0.1023	12.49	0.833	303 13	20 12.8	314 29	20 57.9	0.9960	1.2908	6.04	0.7816	
7	0.1051	12.68	0.845	303 40	20 14.7	313 28	20 53.9	0.9974	1.2902	6.14	0.7884	
8	0.1078	12.90	0.860	304 7	20 16.5	312 27	20 49.8	0.9995	1.2895	6.23	0.7950	
9	0.1106	+13.11	+0.874	304 31	20 18.1	311 26	20 45.7	+1.0024	+1.2889	-6.32	-0.8013	
10	0.1133	13.32	0.888	304 49	20 19.3	310 24	20 41.6	1.0056	1.2882	6.41	0.8073	
11	0.1160	13.49	0.899	305 1	20 20.1	309 22	20 37.5	1.0092	1.2876	6.50	0.8131	
12	0.1187	13.63	0.909	305 7	20 20.5	308 20	20 33.3	1.0126	1.2869	6.58	0.8187	
13	0.1215	13.73	0.915	305 8	20 20.5	307 18	20 29.2	1.0155	1.2863	6.66	0.8241	
14	0.1242	+13.78	+0.919	305 6	20 20.4	306 16	20 25.1	+1.0176	+1.2856	-6.74	-0.8292	
15	0.1269	+13.81	+0.921	305 4	20 20.3	305 13	20 20.9	+1.0189	+1.2850	-6.82	-0.8341	

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	T	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	°	'	°	'			"	
Feb. 15	0.1269	+13.81	+0.921	305 4	20 20.3	305 13	20 20.9	+1.0189	+1.2850	-6.82	-0.8341
16	0.1296	13.84	0.923	305 5	20 20.3	304 10	20 16.7	1.0196	1.2844	6.90	0.8389
17	0.1324	13.87	0.925	305 10	20 20.7	303 7	20 12.5	1.0197	1.2838	6.98	0.8436
h 18	0.1351	13.93	0.929	305 21	20 21.4	302 4	20 8.3	1.0197	1.2832	7.05	0.8482
(10.0) 19	0.1379	14.03	0.935	205 38	20 22.5	301 1	20 4.1	1.0198	1.2826	7.12	0.8526
20	0.1406	+14.17	+0.945	305 59	20 23.9	299 58	19 59.9	+1.0205	+1.2820	-7.19	-0.8569
21	0.1433	14.34	0.956	306 22	20 25.5	298 55	19 55.7	1.0218	1.2814	7.26	0.8611
22	0.1461	14.54	0.969	306 44	20 26.9	297 52	19 51.5	1.0237	1.2809	7.32	0.8650
23	0.1488	14.74	0.983	307 3	20 28.2	296 48	19 47.2	1.0264	1.2803	7.38	0.8686
24	0.1516	14.93	0.995	307 17	20 29.1	295 45	19 43.0	1.0296	1.2798	7.44	0.8719
25	0.1543	+15.09	+1.006	307 26	20 29.7	294 41	19 38.7	+1.0328	+1.2793	-7.50	-0.8750
26	0.1570	15.21	1.014	307 31	20 30.1	293 37	19 34.5	1.0357	1.2788	7.55	0.8780
27	0.1598	15.31	1.021	307 31	20 30.1	292 33	19 30.2	1.0381	1.2784	7.60	0.8809
28	0.1625	15.37	1.025	307 31	20 30.1	291 29	19 25.9	1.0398	1.2779	7.65	0.8837
29	0.1653	15.40	1.027	307 32	20 30.1	290 25	19 21.7	1.0408	1.2775	7.70	0.8865
Mar. 1	0.1680	+15.44	+1.029	307 36	20 30.4	289 20	19 17.3	+1.0412	+1.2771	-7.75	-0.8892
2	0.1707	15.49	1.033	307 45	20 30.9	288 16	19 13.1	1.0412	1.2767	7.79	0.8917
3	0.1735	15.57	1.038	308 0	20 32.0	287 11	19 8.8	1.0412	1.2763	7.83	0.8940
4	0.1762	15.69	1.046	308 19	20 33.3	286 7	19 4.5	1.0414	1.2759	7.87	0.8961
h 5	0.1790	15.84	1.056	308 41	20 34.7	285 2	19 0.1	1.0421	1.2755	7.91	0.8980
(11.0) 6	0.1817	+16.02	+1.068	309 3	20 36.2	283 57	18 55.8	+1.0433	+1.2752	-7.94	-0.8996
7	0.1844	16.21	1.081	309 23	20 37.5	282 53	18 51.5	1.0453	1.2749	7.97	0.9012
8	0.1872	16.39	1.093	309 39	20 38.6	281 48	18 47.2	1.0477	1.2746	7.99	0.9027
9	0.1899	16.55	1.103	309 49	20 39.3	280 43	18 42.9	1.0504	1.2744	8.01	0.9041
10	0.1927	16.67	1.111	309 54	20 39.7	279 38	18 38.5	1.0529	1.2742	8.03	0.9054
11	0.1954	+16.75	+1.117	309 54	20 39.7	278 33	18 34.2	+1.0550	+1.2739	-8.05	-0.9065
12	0.1981	16.80	1.120	309 51	20 39.4	277 28	18 29.9	1.0565	1.2737	8.07	0.9074
13	0.2009	16.81	1.121	309 48	20 39.2	276 23	18 25.5	1.0573	1.2735	8.09	0.9082
14	0.2036	16.81	1.121	309 48	20 39.2	275 18	18 21.2	1.0574	1.2734	8.11	0.9080
15	0.2064	16.82	1.121	309 51	20 39.4	274 13	18 16.9	1.0570	1.2733	8.12	0.9095
16	0.2091	+16.85	+1.123	310 0	20 40.0	273 8	18 12.5	+1.0564	+1.2732	-8.13	-0.9100
17	0.2118	16.91	1.127	310 15	20 41.0	272 3	18 8.2	1.0559	1.2732	8.13	0.9104
18	0.2146	17.01	1.134	310 34	20 42.3	270 58	18 3.9	1.0558	1.2732	8.13	0.9106
19	0.2173	17.16	1.144	310 55	20 43.7	269 53	17 59.5	1.0563	1.2732	8.13	0.9106
h 20	0.2201	17.33	1.155	311 17	20 45.1	268 48	17 55.2	1.0576	1.2732	8.13	0.9105
(12.0) 21	0.2228	+17.51	+1.167	311 37	20 46.4	267 43	17 50.9	+1.0595	+1.2732	-8.13	-0.9103
22	0.2255	17.69	1.179	311 50	20 47.3	266 38	17 46.5	1.0617	1.2733	8.12	0.9100
23	0.2283	17.85	1.190	312 1	20 48.1	265 33	17 42.2	1.0642	1.2734	8.11	0.9096
24	0.2310	17.98	1.199	312 6	20 48.4	264 28	17 37.9	1.0664	1.2735	8.10	0.9090
25	0.2338	18.06	1.204	312 8	20 48.5	263 23	17 33.6	1.0682	1.2736	8.09	0.9082
26	0.2365	+18.12	+1.208	312 9	20 48.6	262 19	17 29.3	+1.0695	+1.2737	-8.07	-0.9073
27	0.2392	18.15	1.210	312 11	20 48.7	261 15	17 25.0	1.0700	1.2739	8.05	0.9063
28	0.2419	18.19	1.213	312 16	20 49.1	260 11	17 20.7	1.0700	1.2741	8.03	0.9052
29	0.2447	18.23	1.215	312 27	20 49.8	259 7	17 16.5	1.0697	1.2743	8.01	0.9039
30	0.2474	18.30	1.220	312 42	20 50.8	258 3	17 12.2	1.0693	1.2746	7.99	0.9025
31	0.2501	+18.40	+1.227	313 1	20 52.1	256 59	17 7.9	+1.0689	+1.2749	-7.96	-0.9010
Apr. 1	0.2528	+18.53	+1.235	313 24	20 53.6	255 55	17 3.7	+1.0691	+1.2752	-7.93	-0.8993

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	T	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
Apr. 											

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g .	Log h .	i	Log i .
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	"	h m	"	h m			"	
May 17	0.3788	+24.56	+1.637	324 27	21 37.8	210 6	14 0.4	+1.1180	+1.3006	-4.35	-0.6382
18	0.3816	24.73	1.649	324 34	21 38.3	209 10	13 56.7	1.1204	1.3012	4.23	0.6264
19	0.3843	24.85	1.657	324 39	21 38.6	208 15	13 53.0	1.1221	1.3017	4.11	0.6142
20	0.3870	24.96	1.664	324 45	21 39.0	207 20	13 49.3	1.1235	1.3022	3.99	0.6015
(16.0) 21	0.3897	25.04	1.669	324 53	21 39.5	206 25	13 45.7	1.1243	1.3027	3.87	0.5883
22	0.3925	+25.13	+1.675	325 4	21 40.3	205 30	13 42.0	+1.1249	+1.3032	-3.75	-0.5746
23	0.3952	25.24	1.683	325 21	21 41.4	204 36	13 38.4	1.1252	1.3037	3.63	0.5603
24	0.3980	25.38	1.692	325 42	21 42.8	203 41	13 34.7	1.1258	1.3042	3.51	0.5454
25	0.4007	25.56	1.704	326 5	21 44.3	202 47	13 31.1	1.1268	1.3046	3.39	0.5299
26	0.4034	25.76	1.717	326 29	21 45.9	201 53	13 27.5	1.1283	1.3050	3.27	0.5138
27	0.4062	+26.01	+1.734	326 52	21 47.5	200 59	13 23.9	+1.1305	+1.3054	-3.15	-0.4968
28	0.4089	26.26	1.751	327 13	21 48.9	200 5	13 20.3	1.1330	1.3058	3.02	0.4789
29	0.4117	26.51	1.767	327 28	21 49.9	199 11	13 16.7	1.1357	1.3062	2.89	0.4601
30	0.4144	26.73	1.782	327 39	21 50.6	198 17	13 13.1	1.1386	1.3066	2.76	0.4404
31	0.4171	26.92	1.795	327 45	21 51.0	197 23	13 9.5	1.1411	1.3070	2.63	0.4197
June 1	0.4199	+27.07	+1.805	327 48	21 51.2	196 30	13 6.0	+1.1432	+1.3073	-2.50	-0.3979
2	0.4226	27.17	1.811	327 50	21 51.3	195 36	13 2.4	1.1448	1.3077	2.37	0.3747
3	0.4254	27.26	1.817	327 54	21 51.6	194 43	12 58.9	1.1459	1.3080	2.24	0.3502
h 4	0.4281	27.33	1.822	328 0	21 52.0	193 50	12 55.3	1.1465	1.3084	2.11	0.3238
(17.0) 5	0.4308	27.40	1.827	328 11	21 52.7	192 56	12 51.7	1.1468	1.3087	1.98	0.2959
6	0.4336	+27.49	+1.833	328 25	21 53.7	192 3	12 48.2	+1.1473	+1.3089	-1.85	-0.2659
7	0.4363	27.64	1.843	328 43	21 54.9	191 10	12 44.7	1.1480	1.3091	1.72	0.2335
8	0.4391	27.82	1.855	329 4	21 56.3	190 17	12 41.1	1.1492	1.3093	1.59	0.1984
9	0.4418	28.04	1.869	329 25	21 57.7	189 24	12 37.6	1.1511	1.3095	1.45	0.1602
10	0.4445	28.30	1.887	329 44	21 58.9	188 31	12 34.1	1.1535	1.3097	1.31	0.1182
11	0.4473	+28.54	+1.903	329 59	21 59.9	187 39	12 30.6	+1.1563	+1.3099	-1.18	-0.0713
12	0.4500	28.79	1.919	330 10	22 0.7	186 46	12 27.1	1.1593	1.3100	1.04	0.0188
13	0.4528	29.02	1.935	330 18	22 1.2	185 53	12 23.5	1.1623	1.3101	0.91	9.9588
14	0.4555	29.21	1.947	330 21	22 1.4	185 1	12 20.0	1.1649	1.3103	0.77	9.8893
15	0.4582	29.37	1.958	330 22	22 1.5	184 8	12 16.5	1.1671	1.3104	0.64	9.8055
16	0.4610	+29.50	+1.967	330 24	22 1.6	183 16	12 13.1	+1.1689	+1.3104	-0.50	-9.7025
17	0.4637	29.61	1.974	330 28	22 1.9	182 23	12 9.5	1.1703	1.3105	0.37	9.5674
18	0.4665	29.72	1.981	330 35	22 2.3	181 31	12 6.1	1.1713	1.3105	0.23	9.3720
h 19	0.4692	29.84	1.989	330 46	22 3.1	180 38	12 2.5	1.1722	1.3106	-0.10	-8.9952
(18.0) 20	0.4719	29.97	1.998	331 1	22 4.1	179 45	11 59.0	1.1732	1.3106	+0.04	+8.5635
21	0.4747	+30.16	+2.011	331 19	22 5.3	178 53	11 55.5	+1.1746	+1.3106	+0.17	+9.2357
22	0.4774	30.37	2.025	331 37	22 6.5	178 0	11 52.0	1.1763	1.3105	0.31	9.4878
23	0.4802	30.61	2.041	331 54	22 7.6	177 8	11 48.5	1.1787	1.3105	0.44	9.6462
24	0.4829	30.87	2.058	332 9	22 8.6	176 15	11 45.0	1.1814	1.3104	0.58	9.7629
25	0.4856	31.14	2.076	332 20	22 9.3	175 22	11 41.5	1.1843	1.3103	0.71	9.8539
26	0.4884	+31.37	+2.091	332 27	22 9.8	174 30	11 38.0	+1.1872	+1.3102	+0.85	+9.9290
27	0.4911	31.58	2.105	332 29	22 9.9	173 37	11 34.5	1.1899	1.3101	0.98	9.9929
28	0.4939	31.76	2.117	332 28	22 9.9	172 45	11 31.0	1.1922	1.3100	1.12	0.0486
29	0.4966	31.88	2.125	332 27	22 9.8	171 52	11 27.5	1.1940	1.3098	1.25	0.0977
30	0.4993	31.98	2.132	332 26	22 9.7	170 59	11 23.9	1.1954	1.3096	1.39	0.1417
July 1	0.5020	+32.06	+2.137	332 27	22 9.8	170 7	11 20.5	+1.1964	+1.3094	+1.52	+0.1815
2	0.5048	+32.13	+2.142	332 32	22 10.1	169 14	11 16.9	+1.1971	+1.3092	+1.65	+0.2179

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	T	f		G		H		Log g.	Log A.	i	Log i.		
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
July	y	"	s	°	h m	°	h m			"	s		
	1	0.5020	+32.06	+2.137	332 27	22 9.8	170 7	11 20.5	+1.1964	+1.3094	+1.52	+0.1815	
	2	0.5048	32.13	2.142	332 32	22 10.1	169 14	11 16.9	1.1971	1.3092	1.65	0.2179	
	h	3	0.5075	32.23	2.149	332 41	22 10.7	168 22	11 13.5	1.1978	1.3089	1.78	0.2514
	(19.0)	4	0.5102	32.34	2.156	332 52	22 11.5	167 29	11 9.9	1.1986	1.3086	1.91	0.2824
	5	0.5129	32.51	2.167	333 6	22 12.4	166 36	11 6.4	1.1999	1.3083	2.05	0.3113	
	6	0.5157	+32.72	+2.181	333 20	22 13.3	165 43	11 2.9	+1.2017	+1.3080	+2.18	+0.3382	
	7	0.5184	32.95	2.197	333 34	22 14.2	164 50	10 59.3	1.2039	1.3077	2.31	0.3634	
	8	0.5212	33.19	2.212	333 44	22 14.9	163 57	10 55.8	1.2065	1.3074	2.44	0.3870	
	9	0.5239	33.46	2.231	333 51	22 15.4	163 3	10 52.2	1.2094	1.3070	2.57	0.4094	
	10	0.5266	33.69	2.246	333 53	22 15.5	162 10	10 48.7	1.2122	1.3067	2.70	0.4306	
	11	0.5294	+33.87	+2.258	333 53	22 15.5	161 16	10 45.1	+1.2148	+1.3063	+2.83	+0.4507	
	12	0.5321	34.03	2.269	333 50	22 15.3	160 23	10 41.5	1.2171	1.3059	2.96	0.4698	
	13	0.5349	34.16	2.277	333 48	22 15.2	159 29	10 37.9	1.2188	1.3055	3.08	0.4878	
	14	0.5376	34.27	2.285	333 46	22 15.1	158 35	10 34.3	1.2202	1.3051	3.20	0.5052	
	15	0.5403	34.36	2.291	333 48	22 15.2	157 41	10 30.7	1.2213	1.3047	3.33	0.5218	
	16	0.5431	+34.45	+2.297	333 53	22 15.5	156 47	10 27.1	+1.2221	+1.3043	+3.45	+0.5377	
	17	0.5458	34.56	2.304	334 2	22 16.1	155 53	10 23.5	1.2231	1.3038	3.57	0.5529	
	18	0.5486	34.71	2.314	334 13	22 16.9	154 59	10 19.9	1.2242	1.3033	3.69	0.5674	
	19	0.5513	34.89	2.326	334 25	22 17.7	154 4	10 16.3	1.2258	1.3028	3.81	0.5811	
	h	20	0.5540	35.13	2.342	334 38	22 18.5	153 10	10 12.7	1.2278	1.3023	3.93	0.5944
	(20.0)	21	0.5568	+35.36	+2.357	334 48	22 19.2	152 15	10 9.0	+1.2302	+1.3018	+4.05	+0.6073
	22	0.5595	35.60	2.373	334 54	22 19.6	151 20	10 5.3	1.2328	1.3013	4.17	0.6197	
	23	0.5623	35.83	2.389	334 57	22 19.8	150 25	10 1.7	1.2354	1.3008	4.29	0.6316	
	24	0.5650	36.03	2.402	334 57	22 19.8	149 30	9 58.0	1.2379	1.3002	4.40	0.6431	
	25	0.5677	36.20	2.413	334 54	22 19.6	148 35	9 54.3	1.2400	1.2997	4.51	0.6541	
	26	0.5705	+36.31	+2.421	334 49	22 19.3	147 39	9 50.6	+1.2417	+1.2991	+4.62	+0.6648	
	27	0.5732	36.40	2.427	334 44	22 18.9	146 44	9 46.9	1.2430	1.2985	4.73	0.6752	
	28	0.5760	36.45	2.430	334 41	22 18.7	145 48	9 43.2	1.2438	1.2979	4.84	0.6852	
	29	0.5787	36.50	2.433	334 42	22 18.8	144 53	9 39.5	1.2443	1.2973	4.95	0.6949	
	30	0.5814	36.56	2.437	334 46	22 19.1	143 57	9 35.8	1.2448	1.2967	5.06	0.7042	
31	0.5842	+36.65	+2.443	334 53	22 19.5	143 1	9 32.1	+1.2454	+1.2961	+5.17	+0.7132		
Aug.	1	0.5869	36.78	2.452	335 2	22 20.1	142 5	9 28.3	1.2464	1.2955	5.27	0.7219	
	2	0.5897	36.93	2.462	335 11	22 20.7	141 8	9 24.5	1.2477	1.2949	5.37	0.7303	
	3	0.5924	37.13	2.475	335 21	22 21.4	140 11	9 20.7	1.2494	1.2943	5.47	0.7383	
	h	4	0.5951	37.34	2.489	335 28	22 21.9	139 14	9 16.9	1.2515	1.2937	5.57	0.7461
	(21.0)	5	0.5979	+37.56	+2.504	335 32	22 22.1	138 17	9 13.1	+1.2539	+1.2930	+5.67	+0.7537
	6	0.6006	37.77	2.518	335 33	22 22.3	137 20	9 9.3	1.2562	1.2924	5.77	0.7611	
	7	0.6034	37.94	2.529	335 30	22 22.0	136 23	9 5.5	1.2584	1.2918	5.87	0.7682	
	8	0.6061	38.09	2.539	335 26	22 21.7	135 25	9 1.7	1.2602	1.2912	5.96	0.7751	
	9	0.6088	38.18	2.545	335 20	22 21.3	134 27	8 57.8	1.2617	1.2905	6.05	0.7818	
	10	0.6116	+38.26	+2.551	335 17	22 21.1	133 29	8 53.9	+1.2628	+1.2899	+6.14	+0.7882	
	11	0.6143	38.31	2.554	335 15	22 21.0	132 31	8 50.1	1.2635	1.2893	6.23	0.7944	
	12	0.6171	38.38	2.559	335 17	22 21.1	131 33	8 46.2	1.2641	1.2887	6.32	0.8004	
	13	0.6198	38.46	2.564	335 21	22 21.4	130 34	8 42.3	1.2648	1.2881	6.40	0.8063	
	14	0.6225	38.58	2.572	335 29	22 21.9	129 35	8 38.3	1.2656	1.2874	6.48	0.8119	
	15	0.6253	+38.72	+2.581	335 39	22 22.6	128 36	8 34.4	+1.2667	+1.2868	+6.56	+0.8173	
	16	0.6280	+38.89	+2.593	335 48	22 23.2	127 36	8 30.4	+1.2680	+1.2862	+6.64	+0.8225	

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	r	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	°	'	°	'			"	s
Aug. 16	0.6280	+38.89	+2.593	335 48	22 23.2	127 36	8 30.4	+1.2680	+1.2862	+6.64	+0.8225
17	0.6308	39.09	2.606	335 57	22 23.8	126 37	8 26.5	1.2698	1.2856	6.72	0.8276
18	0.6335	39.30	2.620	336 2	22 24.1	125 37	8 22.5	1.2719	1.2850	6.79	0.8325
h 19	0.6362	39.51	2.634	336 4	22 24.3	124 37	8 18.5	1.2740	1.2844	6.87	0.8372
(23.0) 20	0.6389	39.69	2.646	336 4	22 24.3	123 38	8 14.5	1.2760	1.2838	6.94	0.8417
21	0.6417	+39.83	+2.655	336 0	22 24.0	122 38	8 10.5	+1.2777	+1.2832	+7.01	+0.8461
22	0.6444	39.92	2.661	335 55	22 23.7	121 38	8 6.5	1.2791	1.2826	7.08	0.8504
23	0.6471	39.98	2.665	335 49	22 23.3	120 38	8 2.5	1.2800	1.2821	7.15	0.8545
24	0.6498	40.00	2.667	335 45	22 23.0	119 37	7 58.5	1.2805	1.2815	7.21	0.8584
25	0.6526	40.02	2.668	335 44	22 22.9	118 36	7 54.4	1.2808	1.2810	7.27	0.8621
26	0.6553	+40.04	+2.669	335 46	22 23.1	117 35	7 50.3	+1.2809	+1.2805	+7.33	+0.8657
27	0.6581	40.08	2.672	335 50	22 23.3	116 34	7 46.3	1.2810	1.2800	7.39	0.8691
28	0.6608	40.16	2.677	335 58	22 23.9	115 33	7 42.2	1.2814	1.2795	7.45	0.8724
29	0.6635	40.27	2.685	336 6	22 24.4	114 31	7 38.1	1.2822	1.2790	7.50	0.8756
30	0.6663	40.42	2.695	336 15	22 25.0	113 29	7 33.9	1.2833	1.2785	7.55	0.8786
31	0.6690	+40.61	+2.707	336 22	22 25.5	112 27	7 29.8	+1.2849	+1.2781	+7.60	+0.8815
Sept. 1	0.6718	40.80	2.720	336 27	22 25.8	111 25	7 25.7	1.2867	1.2777	7.65	0.8842
2	0.6745	40.98	2.732	336 28	22 25.9	110 24	7 21.6	1.2885	1.2773	7.69	0.8867
h 3	0.6772	41.13	2.742	336 27	22 25.8	109 22	7 17.5	1.2903	1.2769	7.73	0.8891
(23.0) 4	0.6800	41.25	2.750	336 23	22 25.5	108 20	7 13.3	1.2917	1.2765	7.77	0.8914
5	0.6827	+41.34	+2.756	336 19	22 25.3	107 17	7 9.1	+1.2929	+1.2761	+7.81	+0.8936
6	0.6855	41.40	2.760	336 15	22 25.0	106 14	7 4.9	1.2937	1.2757	7.85	0.8956
7	0.6882	41.43	2.762	336 13	22 24.9	105 11	7 0.7	1.2941	1.2754	7.89	0.8975
8	0.6909	41.46	2.764	336 14	22 24.9	104 8	6 56.5	1.2944	1.2751	7.92	0.8992
9	0.6937	41.50	2.767	336 18	22 25.2	103 5	6 52.3	1.2946	1.2748	7.95	0.9008
10	0.6964	+41.58	+2.772	336 26	22 25.7	102 2	6 48.1	+1.2949	+1.2745	+7.98	+0.9023
11	0.6992	41.68	2.779	336 35	22 26.3	100 59	6 43.9	1.2955	1.2743	8.01	0.9037
12	0.7019	41.82	2.787	336 45	22 27.0	99 55	6 39.7	1.2965	1.2741	8.03	0.9050
13	0.7046	41.99	2.799	336 54	22 27.6	98 52	6 35.5	1.2977	1.2739	8.05	0.9061
14	0.7074	42.18	2.812	337 2	22 28.1	97 49	6 31.3	1.2993	1.2737	8.07	0.9071
15	0.7101	+42.37	+2.825	337 6	22 28.4	96 45	6 27.0	+1.3010	+1.2735	+8.09	+0.9080
16	0.7129	42.53	2.835	337 8	22 28.5	95 41	6 22.7	1.3026	1.2734	8.10	0.9088
17	0.7156	42.67	2.845	337 6	22 28.4	94 37	6 18.5	1.3041	1.2733	8.11	0.9094
18	0.7183	42.77	2.851	337 3	22 28.2	93 33	6 14.2	1.3052	1.2733	8.11	0.9099
h 19	0.7211	42.82	2.855	336 59	22 27.9	92 29	6 9.9	1.3059	1.2732	8.11	0.9102
(24.0) 20	0.7238	+42.84	+2.856	336 57	22 27.8	91 25	6 5.7	+1.3062	+1.2732	+8.12	+0.9104
21	0.7266	42.83	2.855	336 56	22 27.7	90 21	6 1.4	1.3062	1.2731	8.12	0.9105
22	0.7293	42.84	2.856	336 59	22 27.9	89 16	5 57.1	1.3061	1.2731	8.12	0.9105
23	0.7320	42.85	2.857	337 4	22 28.3	88 12	5 52.8	1.3061	1.2731	8.12	0.9104
24	0.7348	42.90	2.860	337 13	22 28.9	87 8	5 48.5	1.3062	1.2732	8.12	0.9102
25	0.7375	+43.01	+2.867	337 23	22 29.5	86 4	5 44.3	+1.3066	+1.2733	+8.11	+0.9098
26	0.7403	43.13	2.875	337 33	22 30.2	85 0	5 40.0	1.3073	1.2734	8.11	0.9092
27	0.7430	43.29	2.886	337 42	22 30.8	83 56	5 35.7	1.3085	1.2735	8.10	0.9085
28	0.7457	43.47	2.898	337 50	22 31.3	82 51	5 31.4	1.3099	1.2737	8.08	0.9077
29	0.7485	43.65	2.910	337 54	22 31.6	81 47	5 27.1	1.3114	1.2739	8.06	0.9068
30	0.7512	+43.81	+2.921	337 56	22 31.7	80 43	5 22.9	+1.3129	+1.2741	+8.04	+0.9058
Oct. 1	0.7540	+43.93	+2.929	337 55	22 31.7	79 39	5 18.6	+1.3142	+1.2743	+8.02	+0.9046

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	T	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	°	'	°	'			"	s
Oct. 1	0.7540	+43.93	+2.929	337 55	22 31.7	79 39	5 18.6	+1.3142	+1.2743	+8.02	+0.9046
2	0.7567	44.02	2.935	337 53	22 31.5	78 35	5 14.3	1.3152	1.2745	8.00	0.9033
3	0.7594	44.09	2.939	337 51	22 31.4	77 31	5 10.1	1.3159	1.2748	7.98	0.9019
h 4	0.7621	44.13	2.942	337 51	22 31.4	76 27	5 5.8	1.3163	1.2751	7.95	0.9003
(1.0) 5	0.7649	44.16	2.944	337 54	22 31.6	75 23	5 1.5	1.3165	1.2754	7.92	0.8986
6	0.7676	+44.21	+2.947	338 0	22 32.0	74 19	4 57.3	+1.3166	+1.2757	+7.89	+0.8967
7	0.7703	44.26	2.951	338 9	22 32.5	73 16	4 53.1	1.3167	1.2760	7.86	0.8946
8	0.7730	44.36	2.957	338 20	22 33.3	72 12	4 48.8	1.3171	1.2764	7.82	0.8924
9	0.7758	44.49	2.966	338 32	22 34.1	71 9	4 44.6	1.3178	1.2768	7.78	0.8901
10	0.7785	44.65	2.977	338 43	22 34.9	70 5	4 40.3	1.3189	1.2772	7.73	0.8877
11	0.7813	+44.85	+2.990	338 54	22 35.6	69 2	4 36.1	+1.3203	+1.2776	+7.68	+0.8852
12	0.7840	45.05	3.003	339 1	22 36.1	67 58	4 31.9	1.3218	1.2780	7.63	0.8825
13	0.7867	45.24	3.016	339 6	22 36.4	66 54	4 27.6	1.3234	1.2785	7.58	0.8797
14	0.7895	45.39	3.026	339 7	22 36.5	65 51	4 23.4	1.3248	1.2790	7.53	0.8767
15	0.7922	45.52	3.035	339 7	22 36.5	64 48	4 19.2	1.3260	1.2795	7.47	0.8735
16	0.7950	+45.59	+3.039	339 6	22 36.4	63 45	4 15.0	+1.3268	+1.2800	+7.41	+0.8701
17	0.7977	45.63	3.042	339 6	22 36.4	62 42	4 10.8	1.3272	1.2805	7.35	0.8666
18	0.8004	45.65	3.043	339 8	22 36.5	61 39	4 6.6	1.3273	1.2810	7.29	0.8630
h 19	0.8032	45.67	3.045	339 12	22 36.8	60 36	4 2.4	1.3273	1.2815	7.23	0.8592
(2.0) 20	0.8059	45.70	3.047	339 19	22 37.3	59 33	3 58.2	1.3272	1.2821	7.16	0.8552
21	0.8087	+45.76	+3.051	339 29	22 37.9	58 31	3 54.1	+1.3273	+1.2827	+7.09	+0.8510
22	0.8114	45.85	3.057	339 41	22 38.7	57 29	3 49.9	1.3276	1.2833	7.02	0.8467
23	0.8141	45.99	3.066	339 53	22 39.5	56 27	3 45.8	1.3283	1.2839	6.95	0.8422
24	0.8169	46.17	3.078	340 4	22 40.3	55 25	3 41.7	1.3294	1.2845	6.88	0.8375
25	0.8196	46.36	3.091	340 14	22 40.9	54 23	3 37.5	1.3309	1.2851	6.80	0.8326
26	0.8224	+46.57	+3.105	340 22	22 41.5	53 21	3 33.4	+1.3324	+1.2857	+6.72	+0.8275
27	0.8251	46.76	3.117	340 26	22 41.7	52 20	3 29.3	1.3340	1.2864	6.64	0.8223
28	0.8278	46.93	3.129	340 28	22 41.9	51 18	3 25.2	1.3354	1.2870	6.56	0.8169
29	0.8306	47.06	3.137	340 29	22 41.9	50 17	3 21.1	1.3367	1.2877	6.48	0.8112
30	0.8333	47.16	3.144	340 29	22 41.9	49 16	3 17.1	1.3376	1.2883	6.39	0.8053
31	0.8361	+47.23	+3.149	340 30	22 42.0	48 15	3 13.0	+1.3382	+1.2890	+6.30	+0.7992
Nov. 1	0.8388	47.29	3.153	340 33	22 42.2	47 14	3 8.9	1.3386	1.2896	6.21	0.7929
2	0.8415	47.36	3.157	340 41	22 42.7	46 14	3 4.9	1.3389	1.2902	6.12	0.7864
h 3	0.8443	47.43	3.162	340 50	22 43.3	45 13	3 0.9	1.3392	1.2909	6.02	0.7796
(3.0) 4	0.8470	47.54	3.169	341 2	22 44.1	44 13	2 56.9	1.3396	1.2915	5.92	0.7725
5	0.8498	+47.70	+3.180	341 15	22 45.0	43 12	2 52.9	+1.3406	+1.2922	+5.82	+0.7652
6	0.8525	47.90	3.193	341 29	22 45.9	42 12	2 48.9	1.3418	1.2928	5.72	0.7576
7	0.8552	48.12	3.208	341 40	22 46.7	41 12	2 44.9	1.3433	1.2934	5.62	0.7498
8	0.8580	48.36	3.224	341 49	22 47.3	40 13	2 40.9	1.3451	1.2941	5.52	0.7417
9	0.8607	48.58	3.239	341 56	22 47.7	39 13	2 36.9	1.3468	1.2947	5.41	0.7333
10	0.8635	+48.79	+3.253	342 0	22 48.0	38 14	2 32.9	+1.3485	+1.2954	+5.30	+0.7245
11	0.8662	48.97	3.265	342 1	22 48.1	37 14	2 28.9	1.3500	1.2960	5.19	0.7154
12	0.8689	49.09	3.273	342 1	22 48.1	36 15	2 25.0	1.3511	1.2967	5.08	0.7060
13	0.8717	49.17	3.278	342 2	22 48.1	35 16	2 21.1	1.3518	1.2973	4.97	0.6963
14	0.8744	49.24	3.283	342 4	22 48.3	34 17	2 17.1	1.3523	1.2979	4.86	0.6862
15	0.8772	+49.29	+3.286	342 9	22 48.6	33 18	2 13.2	+1.3526	+1.2985	+4.74	+0.6757
16	0.8799	+49.36	+3.291	342 15	22 49.0	32 19	2 9.3	+1.3529	+1.2991	+4.62	+0.6648

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g .	Log h .	i	Log d .	
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
	y	"	s	"	' h m	"	' h m			"	s	
Nov.	16	0.8799	+49.36	+3.291	342 15	22 49.0	32 19	2 9.3	+1.3529	+1.2991	+4.62	+0.6648
	17	0.8826	49.45	3.297	342 25	22 49.7	31 20	2 5.4	1.3533	1.2997	4.50	0.6536
	h 18	0.8854	49.57	3.305	342 37	22 50.5	30 22	2 1.5	1.3538	1.3003	4.38	0.6419
	(4.0) 19	0.8881	49.73	3.315	342 49	22 51.3	29 24	1 57.6	1.3548	1.3009	4.26	0.6296
	20	0.8909	49.93	3.329	343 1	22 52.1	28 26	1 53.7	1.3561	1.3015	4.14	0.6168
	21	0.8936	+50.16	+3.344	343 10	22 52.7	27 28	1 49.9	+1.3577	+1.3020	+4.01	+0.6035
	22	0.8963	50.40	3.360	343 18	22 53.2	26 30	1 46.0	1.3595	1.3025	3.89	0.5897
	23	0.8990	50.63	3.375	343 23	22 53.5	25 32	1 42.1	1.3613	1.3030	3.76	0.5752
	24	0.9018	50.85	3.390	343 25	22 53.7	24 35	1 38.3	1.3631	1.3035	3.63	0.5601
	25	0.9045	51.03	3.402	343 26	22 53.7	23 37	1 34.5	1.3646	1.3040	3.50	0.5444
	26	0.9072	+51.18	+3.412	343 26	22 53.7	22 40	1 30.7	+1.3658	+1.3045	+3.37	+0.5281
	27	0.9099	51.30	3.420	343 27	22 53.8	21 43	1 26.9	1.3668	1.3050	3.24	0.5110
28	0.9127	51.39	3.426	343 29	22 53.9	20 46	1 23.1	1.3675	1.3055	3.11	0.4929	
29	0.9154	51.48	3.432	343 34	22 54.3	19 49	1 19.3	1.3681	1.3059	2.98	0.4738	
30	0.9182	51.60	3.440	343 42	22 54.8	18 52	1 15.5	1.3688	1.3063	2.85	0.4536	
Dec.	1	0.9209	+51.74	+3.449	343 52	22 55.5	17 55	1 11.7	+1.3697	+1.3067	+2.71	+0.4323
	2	0.9236	51.92	3.461	344 3	22 56.2	16 58	1 7.9	1.3707	1.3071	2.57	0.4099
	3	0.9264	52.14	3.476	344 15	22 57.0	16 2	1 4.1	1.3721	1.3075	2.43	0.3861
	h 4	0.9291	52.38	3.492	344 25	22 57.7	15 5	1 0.3	1.3738	1.3078	2.29	0.3606
	(5.0) 5	0.9319	52.64	3.509	344 33	22 58.2	14 8	0 56.5	1.3757	1.3081	2.15	0.3336
	6	0.9346	+52.91	+3.527	344 38	22 58.5	13 12	0 52.8	+1.3777	+1.3084	+2.01	+0.3045
	7	0.9373	53.16	3.544	344 41	22 58.7	12 15	0 49.0	1.3796	1.3087	1.87	0.2731
	8	0.9401	53.37	3.558	344 42	22 58.8	11 19	0 45.3	1.3814	1.3089	1.73	0.2393
	9	0.9428	53.55	3.570	344 41	22 58.7	10 22	0 41.5	1.3828	1.3092	1.59	0.2023
	10	0.9456	53.67	3.578	344 39	22 58.6	9 26	0 37.7	1.3839	1.3094	1.45	0.1618
	11	0.9483	+53.78	+3.585	344 40	22 58.7	8 30	0 34.0	+1.3847	+1.3096	+1.31	+0.1170
	12	0.9510	53.86	3.591	344 42	22 58.8	7 33	0 30.2	1.3853	1.3098	1.17	0.0668
13	0.9538	53.95	3.597	344 46	22 59.1	6 37	0 26.5	1.3858	1.3100	1.02	0.0099	
14	0.9565	54.04	3.603	344 53	22 59.5	5 41	0 22.7	1.3864	1.3101	0.88	9.9443	
15	0.9593	54.19	3.613	345 1	23 0.1	4 45	0 19.0	1.3872	1.3103	0.73	9.8669	
16	0.9620	+54.36	+3.625	345 11	23 0.7	3 49	0 15.3	+1.3883	+1.3104	+0.59	+9.7721	
17	0.9647	54.57	3.638	345 20	23 1.3	2 53	0 11.5	1.3897	1.3104	0.45	9.6506	
18	0.9675	54.81	3.654	345 27	23 1.8	1 57	0 7.8	1.3914	1.3105	0.30	9.4814	
h 19	0.9702	55.07	3.671	345 33	23 2.2	1 1	0 4.1	1.3933	1.3105	0.16	9.1998	
(6.0) 20	0.9730	55.33	3.689	345 35	23 2.3	0 5	0 0.3	1.3952	1.3106	+0.01	+8.1335	
21	0.9757	+55.55	+3.703	345 36	23 2.4	359 9	23 56.6	+1.3970	+1.3106	-0.13	-9.1176	
22	0.9784	55.76	3.717	345 34	23 2.3	358 13	23 52.9	1.3986	1.3106	0.27	9.4406	
23	0.9812	55.96	3.730	345 33	23 2.2	357 17	23 49.1	1.4001	1.3105	0.42	9.6236	
24	0.9839	56.09	3.739	345 30	23 2.0	356 21	23 45.4	1.4013	1.3104	0.56	9.7527	
25	0.9867	56.18	3.745	345 30	23 2.0	355 25	23 41.7	1.4021	1.3103	0.71	9.8506	
26	0.9894	+56.30	+3.753	345 31	23 2.1	354 29	23 37.9	+1.4029	+1.3102	-0.85	-9.9310	
27	0.9921	56.42	3.761	345 36	23 2.4	353 33	23 34.2	1.4037	1.3101	0.99	9.9987	
28	0.9949	56.55	3.770	345 42	23 2.8	352 36	23 30.4	1.4045	1.3100	1.14	0.0571	
29	0.9976	56.73	3.782	345 49	23 3.3	351 40	23 26.7	1.4056	1.3098	1.28	0.1084	
30	1.0004	56.95	3.797	345 57	23 3.8	350 43	23 22.9	1.4070	1.3096	1.43	0.1543	
31	1.0031	+57.18	+3.812	346 5	23 4.3	349 47	23 19.1	+1.4085	+1.3094	-1.57	-0.1956	
32	1.0058	+57.44	+3.829	346 10	23 4.7	348 51	23 15.4	+1.4104	+1.3092	-1.71	0.2332	

MEAN PLACES FOR 1896. (January 0^d.133, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	"	°	'	"	"
<i>a</i> Andromedæ . . .	2.1	0	3	0.668	+ 3.0926	+ 28	30	58.38	+ 19.884
* <i>β</i> Cassiopeia . . .	2.4	0	3	37.652	3.1776	+ 58	34	32.92	19.851
* 22 Andromedæ . . .	4.9	0	4	54.900	3.1045	+ 45	29	35.90	20.034
4 Draconis (H.) . . S. P.	5.1	0	7	20.080	2.8780	+101	48	21.15	20.021
<i>γ</i> Pegasi (<i>Algenib.</i>) . .	2.8	0	7	52.792	3.0844	+ 14	36	19.18	20.022
* <i>σ</i> Andromedæ . . .	4.4	0	12	53.662	+ 3.1246	+ 36	12	30.83	+ 19.981
* <i>ε</i> Ceti . . .	3.6	0	14	7.544	3.0527	- 9	24	2.77	19.955
* 6 Ursæ Minoris . . S. P.	6.2	0	14	21.536	0.2210	+ 91	43	24.21	19.940
* 44 Piscium . . .	5.8	0	20	4.249	3.0734	+ 1	21	49.39	19.951
<i>β</i> Hydri . . .	2.8	0	20	16.900	3.2214	- 77	50	24.10	20.281
12 Ceti . . .	6.0	0	24	43.855	+ 3.0611	- 4	31	54.85	+ 19.934
<i>κ</i> Draconis . . . S. P.	3.8	0	29	2.765	2.5884	+109	38	18.88	19.986
* <i>π</i> Andromedæ . . .	4.4	0	31	19.485	3.1922	+ 33	8	48.36	19.867
<i>a</i> Cassiopeia (<i>var.</i>) . .	2.3	0	34	36.305	3.3774	+ 55	58	0.75	19.783
<i>β</i> Ceti . . .	2.2	0	38	22.177	3.0139	- 18	33	27.32	19.796
21 Cassiopeia . . .	5.7	0	38	46.401	+ 3.8683	+ 74	25	10.56	+ 19.745
* <i>ν</i> Cassiopeia . . .	4.7	0	38	55.669	3.3219	+ 47	42	54.25	19.749
* <i>δ</i> Piscium . . .	4.8	0	43	17.135	3.1079	+ 7	1	8.35	19.647
32 ² Camelop. (H.) . . S. P.	5.2	0	48	21.861	0.4067	+ 96	1	18.81	19.595
* <i>γ</i> Cassiopeia . . .	2.3	0	50	25.769	3.5837	+ 60	9	12.31	19.556
* <i>μ</i> Andromedæ . . .	4.0	0	50	58.729	+ 3.3131	+ 37	56	7.17	+ 19.610
* 43 Cephei (H.) . . .	4.6	0	54	31.902	7.3253	+ 85	41	56.99	19.488
<i>ε</i> Piscium . . .	4.3	0	57	32.695	3.1097	+ 7	19	48.58	19.447
<i>β</i> Andromedæ . . .	2.2	1	3	54.498	3.3462	+ 35	4	8.68	19.156
* <i>κ</i> Tucanæ . . .	4.9	1	12	14.738	2.0540	- 69	25	42.14	19.164
* <i>f</i> Piscium . . .	5.1	1	12	26.001	+ 3.0901	+ 3	4	0.29	+ 19.029
<i>θ</i> ¹ Ceti . . .	3.6	1	18	49.472	2.9972	- 8	43	12.18	18.658
<i>a</i> Ursæ Minoris (<i>Polaris</i>)	2.2	1	20	54.424	24.4450	+ 88	45	11.50	18.815
38 Cassiopeia . . .	5.9	1	23	29.226	4.3873	+ 69	43	45.28	18.661
* <i>κ</i> Octantis . . . S. P.	5.4	1	24	8.426	8.8450	- 94	44	50.00	18.719
<i>η</i> Piscium . . .	3.7	1	25	55.042	+ 3.2035	+ 14	48	34.74	+ 18.652
* <i>ν</i> Andromedæ . . .	4.2	1	30	41.559	3.5067	+ 40	53	7.40	18.133
* <i>π</i> Piscium . . .	5.5	1	31	35.088	3.1749	+ 11	36	34.78	18.521
<i>a</i> Eridani (<i>Achernar</i>) . .	0.4	1	33	50.086	2.2315	- 57	45	54.70	18.348
* <i>ν</i> Piscium . . .	4.6	1	36	1.117	3.1184	+ 4	57	40.54	18.317
<i>ο</i> Piscium . . .	4.4	1	39	54.071	+ 3.1630	+ 8	38	2.53	+ 18.204
* <i>ζ</i> Ceti . . .	3.6	1	46	19.618	2.9619	- 10	51	0.04	17.810
<i>β</i> Arietis . . .	2.8	1	48	53.614	3.3047	+ 20	17	58.42	17.714
50 Cassiopeia . . .	4.1	1	54	32.949	5.0235	+ 71	55	4.71	17.623
* <i>γ</i> Andromedæ . . .	2.2	1	57	30.818	3.6630	+ 41	49	50.00	17.426
<i>a</i> Arietis . . .	2.1	2	1	18.578	+ 3.3723	+ 22	58	14.02	+ 17.156
<i>a</i> Draconis . . . S. P.	3.7	2	1	34.474	1.6241	+115	7	38.06	17.291
* <i>β</i> Trianguli . . .	3.1	2	3	21.264	3.5566	+ 34	29	43.03	17.187
<i>ε</i> ¹ Ceti . . .	4.5	2	7	29.234	+ 3.1748	+ 8	21	31.39	17.014
* 4 Ursæ Minoris . . S. P.	4.9	2	9	15.119	- 0.3126	+101	57	49.38	16.904
* <i>γ</i> Trianguli . . .	4.3	2	11	7.819	+ 3.5529	+ 33	21	58.21	+ 16.827
* 67 Ceti . . .	5.6	2	11	47.706	2.9897	- 6	54	5.81	16.717
* <i>δ</i> Hydri . . .	4.2	2	19	53.950	1.0566	- 69	7	57.27	16.444
<i>ε</i> Cassiopeia . . .	4.6	2	20	29.352	4.8708	+ 66	56	4.71	16.406
<i>ε</i> ² Ceti . . .	4.5	2	22	37.743	+ 3.1845	+ 7	59	37.45	+ 16.277

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1896. (January 0^d.133, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
5 Ursæ Minoris . S. P.	4.5	2 27 44.683	- 0.1824	+103 50 30.22	+ 16.012
* μ Hydri	5.3	2 33 51.984	- 1.4182	- 79 33 46.13	15.689
* δ Ceti	4.1	2 34 9.107	+ 3.0733	- 0 7 13.52	15.679
* θ Persei	4.2	2 37 5.698	4.0731	+ 48 47 18.09	15.433
γ Ceti	3.6	2 37 54.647	3.1039	+ 2 47 50.54	15.320
* α Arietis	5.5	2 45 44.990	+ 3.3055	+ 14 39 11.75	+ 14.993
β Ursæ Minoris . S. P.	2.2	2 51 0.462	- 0.2243	+105 25 10.27	14.720
* 47 Cephei (H.) . .	5.7	2 52 15.257	+ 7.7517	+ 79 0 26.21	14.646
* ϵ Arietis	4.6	2 53 15.859	3.4222	+ 20 55 27.69	14.588
α Ceti	2.6	2 56 50.524	3.1310	+ 3 40 53.63	14.288
* β Persei. (<i>Algol</i>) (<i>var.</i>) .	2.3	3 1 24.004	+ 3.8860	+ 40 33 16.95	+ 14.094
48 Cephei (H.) . .	5.5	3 7 7.216	7.4302	+ 77 21 8.20	13.679
ζ Arietis	4.8	3 8 55.354	3.4405	+ 20 39 31.86	13.532
α Persei	1.9	3 16 53.816	+ 4.2607	+ 49 29 26.79	13.062
* ι Hydri	5.7	3 18 33.122	- 1.5855	- 77 46 5.23	13.037
* ρ Octantis . . S. P.	5.7	3 19 19.039	+13.0691	- 95 52 55.30	+ 12.893
γ Ursæ Minoris . S. P.	3.2	3 20 53.625	- 0.1287	+107 47 45.41	12.812
* f Tauri	4.3	3 25 7.798	+ 3.3058	+ 12 34 48.73	12.544
ϵ Eridani	3.7	3 28 1.803	2.8240	- 9 48 36.71	12.373
δ Persei	3.1	3 35 31.159	4.2527	+ 47 27 16.92	11.777
* γ Camelopardalis (H) .	4.6	3 39 22.586	+ 6.2489	+ 71 0 41.14	+ 11.497
η Tauri	3.1	3 41 18.055	3.5580	+ 23 46 59.85	11.353
ζ Persei	3.0	3 47 35.620	+ 3.7617	+ 31 34 27.90	10.920
ζ Ursæ Minoris . S. P.	4.6	3 47 46.476	- 2.2383	+101 53 8.36	10.939
* γ Hydri	3.3	3 48 50.798	- 0.9896	- 74 33 27.33	10.989
* ϵ Persei	3.0	3 50 52.357	+ 4.0118	+ 39 42 32.78	+ 10.690
γ Eridani	3.0	3 53 10.662	2.7988	- 13 48 16.35	10.423
* A ¹ Tauri	4.6	3 58 32.779	3.5409	+ 21 47 50.24	10.055
* ζ Persei	4.3	4 1 6.600	4.3395	+ 47 26 4.28	9.905
Groombr. 2320 . S. P.	5.5	4 6 2.030	0.1424	+111 54 56.85	9.497
* o ¹ Eridani	4.2	4 6 47.313	+ 2.9272	- 7 6 32.38	+ 9.593
γ Tauri	3.8	4 13 52.465	+ 3.4097	+ 15 22 34.74	8.930
* η Ursæ Minoris . S. P.	5.0	4 20 32.598	- 1.8089	+104 0 18.05	8.178
ϵ Tauri	3.6	4 22 32.576	+ 3.4982	+ 18 56 58.26	8.228
η Draconis . . S. P.	2.8	4 22 35.097	+ 0.8075	+118 15 1.63	8.215
* δ Mensæ	5.6	4 25 0.644	- 4.2057	- 80 27 28.87	+ 8.081
* m Persei	6.0	4 26 5.814	+ 4.2118	+ 42 50 28.73	7.969
A Draconis . . S. P.	5.0	4 28 11.374	- 0.1323	+111 0 25.46	7.799
α Tauri (<i>Aldebaran</i>) .	1.0	4 29 57.140	+ 3.4381	+ 16 18 0.02	7.486
* τ Tauri	4.5	4 36 0.133	3.5962	+ 22 45 25.70	7.160
α Camelopardalis . .	4.4	4 43 42.381	+ 5.9295	+ 66 9 56.11	+ 6.551
* i Tauri	5.2	4 45 17.381	3.5060	+ 18 39 45.09	6.376
ϵ Aurigæ	2.8	4 50 13.222	3.9015	+ 33 0 4.28	5.990
* ζ Aurigæ	3.9	4 55 12.457	+ 4.1862	+ 40 55 25.70	5.588
ϵ Ursæ Minoris . S. P.	4.5	4 56 37.687	- 6.3111	+ 97 47 30.57	5.477
11 Orionis	4.7	4 58 37.526	+ 3.4249	+ 15 15 32.38	+ 5.267
* β Eridani	2.9	5 2 44.207	2.9488	- 5 13 15.58	4.900
α Aurigæ (<i>Capella</i>) . .	0.1	5 9 0.342	4.4258	+ 45 53 30.75	3.990
β Orionis (<i>Rigel</i>) . .	0.3	5 9 32.366	2.8816	- 8 19 19.21	4.373
* τ Orionis	3.8	5 12 33.383	+ 2.9130	- 6 57 25.69	+ 4.110

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1896.0. (January 0^d.133, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
β Tauri	1.8	5 19 43.033	+ 3.7898	+ 28 31 9.54	+ 3.326
Groombridge 966	6.4	5 25 49.575	8.0054	+ 74 58 27.91	2.998
* χ Aurigæ	5.0	5 25 57.610	3.9055	+ 32 6 54.75	2.986
δ Orionis (<i>var.</i>)	2.3	5 26 41.590	3.0636	- 0 22 34.85	2.899
α Leporis	2.7	5 28 8.587	2.6449	- 17 53 48.88	2.778
* Groombridge 944	6.4	5 28 40.389	+ 18.6920	+ 85 8 39.50	+ 2.746
ϵ Orionis	1.8	5 30 56.148	3.0426	- 1 16 6.70	2.538
α Columbæ	2.7	5 35 53.049	+ 2.1729	- 34 7 47.24	2.061
ω Draconis S. P.	4.9	5 37 33.682	- 0.3531	+ 111 11 38.51	1.636
* κ Orionis	2.3	5 42 49.410	+ 2.8450	- 9 42 24.35	1.504
ϕ^1 Draconis S. P.	4.8	5 43 47.207	- 1.0778	+ 107 48 0.91	+ 1.691
* ν Aurigæ	4.1	5 44 16.846	+ 4.1547	+ 39 7 4.05	1.411
* δ Doradus	4.4	5 44 35.385	0.1053	- 65 46 28.24	1.327
α Orionis (<i>var.</i>)	0.9	5 49 32.467	3.2472	+ 7 23 14.74	0.922
* β Aurigæ	2.0	5 51 54.022	4.4020	+ 44 56 11.28	0.698
* θ Aurigæ	2.9	5 52 37.808	+ 4.0922	+ 37 12 18.09	+ 0.556
ν Orionis	4.5	6 1 38.108	+ 3.4275	+ 14 46 50.19	- 0.173
δ Ursæ Minoris S. P.	4.4	6 5 50.799	- 19.4800	+ 93 23 14.35	0.562
22 Camelopardalis (H.)	4.7	6 7 22.906	+ 6.6168	+ 69 21 21.17	0.763
* η Geminorum	3.5	6 8 36.036	3.6228	+ 22 32 12.22	0.769
μ Geminorum	3.2	6 16 40.163	+ 3.6314	+ 22 33 59.92	- 1.579
* ϕ^1 Aurigæ	5.1	6 16 53.375	4.6262	+ 49 20 26.30	1.488
α Argus (<i>Canopus</i>)	-0.8	6 21 38.669	1.3305	- 52 38 19.93	1.882
* ν Geminorum	4.2	6 22 47.268	+ 3.5630	+ 20 16 39.66	2.013
* χ Draconis S. P.	5.3	6 22 55.856	- 1.0802	+ 107 18 44.74	1.628
γ Geminorum	2.0	6 31 42.245	+ 3.4672	+ 16 29 16.12	- 2.813
* ϵ Geminorum	3.2	6 37 32.006	3.6931	+ 25 14 1.97	3.283
* ϕ^5 Aurigæ	5.4	6 39 14.549	4.3284	+ 43 40 50.23	3.269
† α Canis Majoris (<i>Sirius</i>)	-1.4	6 40 33.920	2.6436	- 16 34 25.08	4.737
* θ Geminorum	3.7	6 45 56.133	+ 3.9601	+ 34 5 11.51	4.024
* ζ Mensæ	5.6	6 48 42.115	- 4.9124	- 80 42 14.44	- 4.148
50 Draconis S. P.	5.6	6 49 43.597	- 1.9116	+ 104 41 19.51	4.392
51 Cephei (H.)	5.3	6 51 44.194	+ 29.7410	+ 87 12 38.68	4.634
ϵ Canis Majoris	1.5	6 54 32.335	2.3578	- 28 49 50.94	4.740
* ζ Geminorum (<i>var.</i>)	4.0	6 57 56.496	3.5621	+ 20 43 21.09	5.034
δ Canis Majoris	1.9	7 4 9.747	+ 2.4386	- 26 13 41.22	- 5.531
* 63 Aurigæ	5.2	7 4 30.180	4.1356	+ 39 29 24.43	5.551
* 25 Camelopardalis	5.3	7 9 12.300	+ 12.9265	+ 82 36 40.79	5.996
* γ^2 Volantis (<i>var.</i>)	3.9	7 9 37.620	- 0.4957	- 70 19 49.88	6.000
δ Draconis S. P.	3.1	7 12 31.911	+ 0.0279	+ 112 31 17.10	6.327
δ Geminorum	3.5	7 13 54.746	+ 3.5874	+ 22 10 24.88	- 6.371
τ Draconis S. P.	4.5	7 17 33.307	- 1.1208	+ 106 50 15.53	6.765
Piazzii vii, 67	5.7	7 20 3.762	+ 6.2930	+ 68 40 40.08	6.901
* β Canis Minoris	3.1	7 21 30.712	3.2594	+ 8 29 55.04	7.020
λ Ursæ Minoris S. P.	6.5	7 26 59.834	- 66.7360	+ 91 1 13.20	7.438
α^2 Geminorum (<i>Castor</i>)	1.9	7 27 57.960	+ 3.8375	+ 32 6 59.72	- 7.586
† α Canis Min. (<i>Procyon</i>)	0.5	7 33 51.481	+ 3.1431	+ 5 29 28.71	9.020
β Geminorum (<i>Pollux</i>)	1.2	7 38 57.169	3.6783	+ 28 16 37.85	8.448
ϕ Geminorum	5.0	7 47 8.000	3.6791	+ 27 2 5.51	9.060
* 26 Lyncis	5.8	7 47 8.421	+ 4.3851	+ 47 50 1.75	- 9.057

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

† Periodic corrections given in the Appendix are still to be applied to the positions of Sirius and Procyon.

MEAN PLACES FOR 1896.0. (January 0^d.133, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s		°	'	"	
* Groombridge 1374	5.6	7	47	44.672	+ 7.2738	+ 74	11	43.23	- 9.118
* Draconis	3.9	7	48	31.370	- 0.1821	+109	59	48.95	9.172
* ω^1 Cancri	6.0	7	54	38.372	+ 3.6364	+ 25	40	38.81	9.614
3 Ursæ Majoris (H.)	5.5	8	2	28.101	6.0411	+ 68	46	47.44	10.210
15 Argûs (ρ)	3.1	8	3	6.896	2.5545	- 24	0	16.55	10.215
* ζ^1 Cancri	4.8	8	6	14.874	+ 3.4457	+ 17	57	38.43	- 10.631
* θ Cancri	3.8	8	10	52.530	+ 3.2580	+ 9	30	20.85	10.882
* Cephei (ρ r.)	4.4	8	12	23.383	- 1.9340	+102	36	6.50	10.978
* 30 Monocerotis	3.9	8	20	27.822	+ 2.9998	- 3	34	1.84	11.530
* θ Chamæleontis	4.6	8	23	45.321	- 1.7211	- 77	8	56.01	11.747
* η Cancri	5.4	8	26	41.761	+ 3.4775	+ 20	47	39.37	- 12.030
Groombr. 3241	6.5	8	30	27.327	- 0.2243	+107	49	14.34	12.219
* α Hydræ	4.5	8	33	19.461	+ 3.1455	+ 3	42	22.92	12.457
* γ Cancri	4.9	8	37	16.111	3.4795	+ 21	50	32.31	12.749
* δ Hydræ	3.5	8	41	16.158	3.1813	+ 6	48	0.77	13.027
* α^2 Cancri (mean)	5.5	8	47	54.017	+ 3.6721	+ 30	58	23.18	- 13.433
* Ursæ Majoris	3.3	8	52	5.257	+ 4.1374	+ 48	26	59.23	13.932
12 Year Cat. 1879	5.3	8	52	18.289	- 2.5697	+ 99	50	16.12	13.665
* Ursæ Majoris	5.0	9	1	14.613	+ 5.3460	+ 67	33	23.99	14.311
* Cancri	5.1	9	2	6.923	3.2552	+ 11	5	12.06	14.313
* θ Hydræ	4.0	9	8	57.265	+ 3.1257	+ 2	45	10.23	- 15.038
* β Argûs	2.0	9	12	3.472	0.6754	- 69	17	19.68	14.809
* γ Argûs	2.6	9	14	18.181	1.6010	- 58	50	18.61	15.007
* α Lynceis	3.3	9	14	43.159	3.6674	+ 34	49	55.24	15.049
* α Cephei	2.6	9	16	5.874	1.4361	+117	51	18.47	15.183
1 Draconis (H.)	4.5	9	22	15.594	+ 8.9480	+ 81	47	9.04	- 15.506
* α Hydræ	2.1	9	22	28.619	2.0490	- 8	12	28.57	15.469
* Ursæ Majoris	4.8	9	25	17.093	5.3898	+ 70	17	13.85	15.593
* Ursæ Majoris	3.2	9	25	54.032	4.0375	+ 52	9	3.94	16.241
* Cephei (ρ r.)	3.4	9	27	19.062	0.7918	+109	53	45.37	15.761
* 10 Leonis Minoris	4.7	9	27	51.230	+ 3.6923	+ 36	51	33.26	- 15.805
* α Leonis	3.8	9	35	36.023	+ 3.2063	+ 10	21	55.20	16.240
* ζ Chamæleontis	5.2	9	36	56.940	- 1.5814	- 80	28	26.67	16.278
* γ Leonis	3.2	9	39	56.918	+ 3.4139	+ 24	15	10.68	16.445
11 Cephei	4.8	9	40	24.033	0.8992	+109	10	2.70	16.543
* α Leonis	4.0	9	46	50.968	+ 3.4208	+ 26	29	48.09	- 16.814
* 19 Leonis Minoris	5.2	9	51	18.908	3.0930	+ 41	33	3.02	16.981
79 Draconis	6.6	9	51	34.002	0.7200	+106	47	22.85	17.017
* α Leonis	5.0	9	54	43.073	3.1738	+ 8	32	35.15	17.153
* α Leonis (R. G. G.)	1.3	10	2	50.030	3.1009	- 12	28	31.47	17.489
32 Ursæ Majoris	5.7	10	10	28.916	+ 4.4134	+ 65	37	36.78	- 17.831
* γ Ursæ Majoris	3.6	10	10	46.511	3.0371	+ 43	25	50.87	17.889
* γ^1 Leonis	2.5	10	14	14.350	3.3189	- 20	22	3.20	18.100
* α Hydræ	4.1	10	21	3.070	2.0000	- 16	18	20.90	18.322
* β Leonis Minoris	4.3	10	21	52.233	3.4247	- 37	14	24.45	18.329
* α Antares	4.5	10	22	23.513	- 2.7107	- 30	32	19.15	- 18.228
* γ Draconis (H.)	5.0	10	26	15.723	3.2448	+ 70	14	54.08	18.415
* γ Leonis	4.0	10	27	20.197	3.1740	- 9	50	23.92	18.444
20 Cephei (R.)	5.7	10	30	26.003	1.0752	-104	18	34.45	18.532
* γ Octantis	4.4	10	35	23.254	- 0.4420	- 28	4	24.84	- 18.704

* Apparent place, as seen from Washington, for the epoch of January 0^d.133, 1896.0.

MEAN PLACES FOR 1896.0. (January 0^d.133, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
* 41 Leonis Minoris . . .	5.1	10 37 45.705	+ 3.2697	+ 23 43 58.23	- 18.749
η Argûs (<i>var.</i>) . . .	1-6	10 41 1.475	2.3149	- 59 8 15.95	18.877
ι Leonis . . .	5.3	10 43 47.494	3.1580	+ 11 5 43.55	18.982
* δ ² Chamæleontis . . .	4.7	10 44 48.695	0.6317	- 79 59 30.91	18.983
ι Cephei . . . S. P.	3.6	10 45 58.537	2.1233	+114 20 48.07	18.883
* 46 Leonis Minoris . . .	3.9	10 47 29.772	+ 3.3679	+ 34 46 32.68	- 19.305
* Groombridge 1706 . . .	6.3	10 51 38.095	4.9490	+ 78 19 38.33	19.196
α Ursæ Majoris . . .	2.0	10 57 18.608	+ 3.7422	+ 62 18 44.77	19.373
* η Octantis . . .	6.1	11 0 3.583	- 0.2342	- 84 2 4.03	19.371
* ρ ³ Leonis . . .	6.2	11 1 35.818	+ 3.0596	+ 2 31 12.09	19.491
* φ Ursæ Majoris . . .	3.2	11 3 49.025	+ 3.3910	+ 45 3 44.56	- 19.512
δ Leonis . . .	2.7	11 8 34.687	3.1974	+ 21 5 36.27	19.692
* υ Ursæ Majoris . . .	3.7	11 12 51.894	3.2562	+ 33 39 42.62	19.579
δ Cræteris . . .	3.9	11 14 8.473	2.9968	- 14 12 57.40	19.469
ο Cephei . . . S. P.	5.1	11 14 21.339	2.4467	+112 27 26.74	19.674
τ Leonis . . .	5.1	11 22 35.330	+ 3.0860	+ 3 25 44.14	- 19.807
λ Draconis . . .	4.0	11 25 13.702	3.6142	+ 69 54 18.10	19.843
* ε Hydræ . . .	3.8	11 27 53.143	2.9440	- 31 16 56.28	19.890
υ Leonis . . .	4.4	11 31 37.430	3.0713	- 0 14 58.77	19.864
γ Cephei . . . S. P.	3.5	11 35 4.473	2.4203	+102 56 53.57	20.077
* χ Ursæ Majoris . . .	3.9	11 40 33.612	+ 3.1881	+ 48 21 21.48	- 19.964
β Leonis . . .	2.2	11 43 45.314	3.0635	+ 15 9 12.12	20.121
γ Ursæ Majoris . . .	2.4	11 48 21.745	3.1790	+ 54 16 22.29	20.028
Groombr. 4163 . . . S. P.	7.0	11 49 46.420	2.8711	+106 10 6.50	20.023
* π Virginis . . .	4.6	11 55 32.578	3.0740	+ 7 11 38.57	20.087
ο Virginis . . .	4.3	11 59 54.684	+ 3.0574	+ 9 18 38.04	- 20.014
* ε Corvi . . .	3.2	12 4 46.534	3.0839	- 22 2 28.86	20.048
4 Draconis (H.) . . .	5.1	12 7 20.080	2.8780	+ 78 11 38.85	20.021
γ Corvi . . .	2.7	12 10 27.447	3.0803	- 16 57 52.30	20.016
* 2 Canum Venaticorum . . .	6.0	12 10 54.952	3.0206	+ 41 14 21.06	20.063
β Chamæleontis . . .	4.5	12 12 14.721	+ 3.4121	- 78 44 4.38	- 20.001
* 6 Ursæ Minoris . . .	6.2	12 14 21.531	0.2210	+ 88 16 35.79	19.940
η Virginis . . .	4.0	12 14 35.112	3.0688	- 0 5 20.16	20.040
α ¹ Crucis . . .	0.9	12 20 48.807	3.2996	- 62 31 21.77	20.012
* δ ² Corvi . . .	3.1	12 24 29.107	3.1033	- 15 56 10.51	20.081
* β Canum Venaticorum . . .	4.4	12 28 48.270	+ 2.8583	+ 41 55 21.01	- 19.612
β Corvi . . .	2.8	12 28 55.401	3.1427	- 22 49 18.03	19.959
* κ Draconis . . .	3.8	12 29 2.765	2.5884	+ 70 21 41.12	19.886
* γ Virginis (<i>mean</i>) . . .	2.9	12 36 23.442	3.0386	- 0 52 45.25	19.807
21 Cassiopeiæ . . . S. P.	5.7	12 38 46.401	3.8683	+105 34 49.44	19.745
* 31 Comæ Berenices . . .	5.1	12 46 38.104	+ 2.9296	+ 28 6 23.33	- 19.655
32 ² Camelopardalis (H.) . . .	5.2	12 48 21.861	0.4067	+ 83 58 41.19	19.595
* γ Cassiopeiæ . . . S. P.	2.3	12 50 25.769	3.5837	+119 50 47.69	19.556
α Canum Venaticorum . . .	3.2	12 51 9.850	2.8145	+ 38 52 47.87	19.506
* 43 Cephei (H.) . . . S. P.	4.6	12 54 31.902	7.3253	+ 94 18 3.01	19.488
* δ Muscæ . . .	3.8	12 55 8.135	+ 4.2034	- 70 59 14.95	- 19.466
* ε Virginis . . .	3.1	12 57 0.030	2.9879	+ 11 31 5.14	19.410
θ Virginis . . .	4.6	13 4 33.858	3.1016	- 4 59 1.76	19.304
* 20 Canum Venaticorum . . .	4.7	13 12 52.776	2.6959	+ 41 7 12.31	19.027
α Virginis (<i>Spica</i>) . . .	1.1	13 19 42.791	+ 3.1544	- 10 37 6.72	- 18.890

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1896.0. (January 0^d.133, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s		°	'	"	
<i>a</i> Urs. Min. (<i>Polaris</i>) S. P.	2.2	13	20	54.424	+24.4450	+ 91	14	48.50	- 18.815
38 Cassiopeiæ . . . S. P.	5.9	13	23	29.226	4.3873	+110	16	14.72	18.661
* <i>κ</i> Octantis	5.4	13	24	8.426	8.8450	- 85	15	10.00	18.719
<i>ζ</i> Virginis	3.6	13	29	23.595	3.0535	- 0	3	50.98	18.507
* B. A. C. 4536 . . .	5.0	13	30	9.161	2.6817	+ 37	42	54.60	18.529
* <i>m</i> Virginis	5.4	13	36	9.179	+ 3.1440	- 8	10	41.25	- 18.273
<i>η</i> Ursæ Majoris . . .	1.9	13	43	26.637	2.3706	+ 49	49	56.01	18.069
<i>η</i> Bootis	2.8	13	49	43.978	2.8567	+ 18	55	8.65	18.158
50 Cassiopeiæ . . . S. P.	4.1	13	54	32.949	5.0235	+108	4	55.29	17.623
* <i>θ</i> Apodis	Var.	13	55	11.948	5.6939	- 76	17	38.97	17.566
<i>β</i> Centauri	0.7	13	56	28.736	+ 4.1832	- 59	52	16.79	- 17.571
* <i>π</i> Hydræ	3.6	14	0	26.819	3.4024	- 26	10	49.50	17.348
<i>α</i> Draconis	3.7	14	1	34.474	1.6241	+ 64	52	21.94	17.291
* <i>δ</i> Bootis	4.8	14	5	39.406	2.7386	+ 25	35	3.34	17.187
* <i>κ</i> Virginis	4.2	14	7	20.853	+ 3.1947	- 9	47	22.81	16.909
* 4 Ursæ Minoris . . .	4.9	14	9	15.119	- 0.3126	+ 78	2	10.62	- 16.904
* <i>δ</i> Octantis	5.0	14	10	15.425	+ 9.0436	- 83	11	27.63	16.910
<i>α</i> Bootis (<i>Arcturus</i>) . .	0.2	14	10	55.064	2.7352	+ 19	43	25.84	18.870
* <i>λ</i> Bootis	4.3	14	12	25.804	2.2824	+ 46	33	56.90	16.648
* <i>λ</i> Virginis	4.7	14	13	28.897	3.2389	- 12	53	32.71	16.730
<i>ε</i> Cassiopeiæ . . . S. P.	4.6	14	20	29.352	+ 4.8708	+113	3	55.29	- 16.406
<i>θ</i> Bootis	4.1	14	21	39.449	2.0441	+ 52	19	52.97	16.751
<i>ρ</i> Bootis	3.6	14	27	20.951	+ 2.5878	+ 30	49	40.26	15.946
5 Ursæ Minoris . . .	4.5	14	27	44.683	- 0.1824	+ 76	9	29.78	16.012
<i>α</i> Centauri (<i>mean</i>) . .	-0.1	14	32	32.093	+ 4.0393	- 60	24	21.72	15.034
* <i>μ</i> Hydri S. P.	5.3	14	33	51.984	- 1.4182	-100	26	13.87	- 15.689
* <i>α</i> Apodis	4.1	14	34	56.934	+ 7.2220	- 78	36	11.25	15.643
* 33 Bootis	5.3	14	34	58.013	2.2342	+ 44	51	11.20	15.698
<i>ε</i> Bootis	2.6	14	40	26.771	2.6213	+ 27	30	45.44	15.326
<i>α</i> Libræ	2.9	14	45	7.423	+ 3.3105	- 15	36	34.48	15.147
<i>β</i> Ursæ Minoris . . .	2.2	14	51	0.462	- 0.2243	+ 74	34	49.73	- 14.720
* 47 Cephei (H.) . . S. P.	5.7	14	52	15.257	+ 7.7517	+100	59	33.79	14.646
* <i>γ</i> Scorpii	3.4	14	57	58.911	3.5007	- 24	52	23.31	14.356
<i>β</i> Bootis	3.7	14	58	1.738	2.2601	+ 40	48	2.48	14.346
48 Cephei (H.) . . S. P.	5.5	15	7	7.216	7.4302	+102	38	51.80	13.679
* <i>δ</i> Bootis	3.5	15	11	18.652	+ 2.4210	+ 33	42	10.76	- 13.567
<i>β</i> Libræ	2.9	15	11	24.587	3.2225	- 8	59	56.99	13.487
* <i>ρ</i> Octantis	5.7	15	19	19.039	13.0691	- 84	7	4.70	12.893
<i>μ</i> ¹ Bootis	4.5	15	20	33.715	+ 2.2663	+ 37	44	31.12	12.764
<i>γ</i> ² Ursæ Minoris . . .	3.2	15	20	53.625	- 0.1287	+ 72	12	14.59	12.812
* <i>β</i> Coronæ Borealis . .	3.9	15	23	32.508	+ 2.4752	+ 29	27	50.62	- 12.576
<i>α</i> Coronæ Borealis . .	2.3	15	30	17.091	2.5394	+ 27	3	52.87	12.287
<i>α</i> Serpentis	2.7	15	39	8.698	2.9521	+ 6	45	9.99	11.529
* <i>γ</i> Camelop. (H.) . . S. P.	4.6	15	39	22.586	6.2489	+108	59	18.86	11.497
<i>ε</i> Serpentis	3.7	15	45	37.893	+ 2.9875	+ 4	47	27.26	11.026
<i>ζ</i> Ursæ Minoris . . .	4.6	15	47	46.476	- 2.2383	+ 78	6	51.64	- 10.939
<i>ε</i> Coronæ Borealis . .	4.1	15	53	16.975	+ 2.4834	+ 27	10	44.63	10.592
<i>δ</i> Scorpii	2.6	15	54	10.999	3.5397	- 22	19	32.12	10.500
<i>β</i> ¹ Scorpii	2.9	15	59	23.360	3.4817	- 19	31	14.66	10.111
* <i>δ</i> ¹ Apodis	4.9	16	4	48.450	+ 8.7966	- 78	25	58.81	- 9.660

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1896.o. (January 0^d.133, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	'	"	"
* φ Herculis	4.2	16	5	29.322	+ 1.8816	+ 45	12	27.31	- 9.566
Groombridge 2320	5.5	16	6	2.030	0.1424	+ 68	5	3.15	9.497
δ Ophiuchi	2.8	16	8	53.702	3.1402	- 3	25	35.13	9.488
* α Coronæ Borealis (<i>mean</i>)	5.3	16	10	46.961	2.2449	+ 34	7	20.66	9.238
τ Herculis	3.9	16	16	36.895	1.8014	+ 46	33	39.15	8.720
* γ Apodis	4.0	16	17	30.667	+ 9.0851	78	39	47.41	- 8.672
* η Ursæ Minoris	5.0	16	20	32.598	- 1.8089	+ 75	59	41.95	8.178
η Draconis	2.8	16	22	35.097	+ 0.8075	+ 61	44	58.37	8.215
α Scorpii (<i>Antares</i>)	1.2	16	23	1.791	3.6712	- 26	12	3.94	8.271
β Herculis	2.8	16	25	44.941	+ 2.5777	+ 21	42	58.72	8.035
A Draconis	5.0	16	28	11.374	- 0.1323	+ 68	59	34.54	- 7.799
ζ Ophiuchi	2.8	16	31	25.899	+ 3.2996	- 10	21	22.81	7.536
α Trianguli Australis	2.2	16	37	39.217	6.3095	- 68	50	10.42	7.101
η Herculis	3.7	16	39	19.788	2.0541	+ 39	7	12.20	7.003
α Camelopardalis S. P.	4.4	16	43	42.381	5.9295	+113	50	3.89	6.551
* κ Ophiuchi	3.4	16	52	44.730	+ 2.8377	+ 9	32	12.64	- 5.807
ε Ursæ Minoris	4.5	16	56	37.687	- 6.3111	+ 82	12	29.43	5.477
δ Herculis	5.3	16	57	45.953	+ 2.2115	+ 33	43	8.15	5.377
* η Ophiuchi	2.5	17	4	24.756	3.4360	- 15	35	45.89	4.738
α ¹ Herculis (<i>var.</i>)	3.1	17	9	54.307	2.7338	+ 14	30	32.15	4.321
* π Herculis	3.4	17	11	25.508	+ 2.0893	+ 36	55	34.97	- 4.210
* θ Ophiuchi	3.3	17	15	37.300	3.6798	- 24	53	44.57	3.912
δ Ophiuchi (<i>var.</i>)	4.4	17	20	1.097	3.6595	- 24	4	46.05	3.612
* δ Aræ	3.8	17	21	42.708	5.4033	- 60	35	49.40	3.475
Groombridge 966 S. P.	6.4	17	25	49.575	8.0054	+105	1	32.09	2.998
β Draconis	3.0	17	28	4.992	+ 1.3537	+ 52	22	41.67	- 2.784
* Groombridge 944 S. P.	6.4	17	28	40.389	18.6920	+ 94	51	20.50	2.746
α Ophiuchi	2.2	17	30	6.397	2.7831	+ 12	38	8.80	2.845
* ε Herculis	4.0	17	36	31.880	+ 1.6969	+ 46	3	41.84	2.051
ω Draconis	4.9	17	37	33.682	- 0.3531	+ 68	48	21.49	1.636
μ Herculis	3.5	17	42	23.318	+ 2.3466	+ 27	46	53.14	- 2.300
ψ ¹ Draconis	4.8	17	43	47.207	- 1.0778	+ 72	11	59.09	1.691
* θ Herculis	3.9	17	52	41.140	+ 2.0553	+ 37	15	51.67	0.621
γ Draconis	2.5	17	54	11.464	1.3917	+ 51	30	3.70	0.538
γ ² Sagittarii	2.9	17	59	7.596	3.8517	- 30	25	30.97	- 0.295
* ο Herculis	3.9	18	3	29.143	+ 2.3395	+ 28	44	53.37	+ 0.308
δ Ursæ Minoris	4.4	18	5	50.799	-19.4800	+ 86	36	45.65	0.562
22 Camelop. (II.) S. P.	4.7	18	7	22.906	+ 6.6168	+110	38	38.83	0.763
μ ¹ Sagittarii	4.1	18	7	32.617	3.5867	- 21	5	9.15	0.647
η Serpentis	3.5	18	15	55.690	3.1024	- 2	55	31.42	0.717
* λ Sagittarii	2.9	18	21	33.134	+ 3.7025	- 25	28	45.37	+ 1.660
* γ Draconis	5.3	18	22	55.856	- 1.0802	+ 72	41	15.26	1.628
ι Aquilæ	4.0	18	29	32.859	+ 3.2645	- 8	19	0.44	2.248
* ζ Pavonis	4.2	18	30	52.847	7.0266	- 71	30	58.25	2.553
α Lyræ (<i>Vega</i>)	0.2	18	33	25.053	2.0314	+ 38	41	12.42	3.186
β Lyræ (<i>var.</i>)	3.6	18	46	14.423	+ 2.2143	+ 33	14	30.54	+ 4.001
σ Sagittarii	2.3	18	48	48.998	+ 3.7213	- 26	25	32.80	4.162
50 Draconis	5.6	18	49	43.597	- 1.9116	+ 75	18	40.49	4.392
51 Cephei (II.) S. P.	5.3	18	51	44.194	+29.7410	+ 92	47	21.32	4.634
σ Octantis	5.6	18	52	53.186	+104.0170	- 89	15	36.43	+ 4.569

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MEAN PLACES FOR 1896.0. (January 0^d.133, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		^h ^m ^s	^s	[°] ['] ["]	["]
* γ Lyrae	3.3	18 55 3.212	+ 2.2444	+ 32 32 49.09	+ 4.781
ζ Aquilæ	3.1	19 0 37.806	2.7569	+ 13 42 32.09	5.139
* ε Lyrae	5.2	19 3 35.473	2.1413	+ 35 56 13.91	5.502
* 25 Camelopardalis . S. P.	5.3	19 9 12.300	12.9265	+ 97 23 19.21	5.996
δ Sagittarii	5.0	19 11 32.998	3.5119	- 19 8 16.20	6.141
δ Draconis	3.1	19 12 31.911	+ 0.0279	+ 67 28 42.90	+ 6.327
* θ Lyrae	4.4	19 12 45.424	+ 2.0791	+ 37 56 54.24	6.260
τ Draconis	4.5	19 17 33.307	- 1.1208	+ 73 9 44.47	6.765
Piazzi vii, 67 . S. P.	5.7	19 20 3.762	+ 6.2930	+111 19 19.92	6.901
δ Aquilæ	3.5	19 20 15.279	3.0251	+ 2 54 26.97	6.956
* β Cygni	3.1	19 26 31.640	+ 2.4195	+ 27 44 28.43	+ 7.384
λ Ursæ Minoris	6.5	19 26 59.834	-66.7560	+ 88 58 46.80	7.438
κ Aquilæ	5.0	19 31 17.776	+ 3.2286	- 7 15 30.66	7.779
* β Sagittæ	4.5	19 36 22.689	2.6955	+ 17 14 5.99	8.158
γ Aquilæ	2.8	19 41 18.923	2.8522	+ 10 21 35.45	8.570
* δ Cygni	2.9	19 41 43.506	+ 1.8761	+ 44 52 36.57	+ 8.647
α Aquilæ (<i>Allair</i>) . . .	0.9	19 45 42.552	2.9275	+ 8 35 37.11	9.296
* Groombridge 1374 S. P.	5.6	19 47 44.672	+ 7.2738	+105 48 16.77	9.118
ε Draconis	3.9	19 48 31.370	- 0.1821	+ 70 0 11.05	9.172
* ε Pavonis	4.1	19 48 33.362	+ 7.0087	- 73 11 1.47	9.147
β Aquilæ	3.9	19 50 12.284	+ 2.9470	+ 6 8 49.13	+ 8.783
* γ Sagittæ	3.6	19 54 7.930	2.6678	+ 19 12 35.31	9.616
* ε Sagittarii	4.5	19 56 15.838	3.6960	- 27 59 55.39	9.758
τ Aquilæ	5.7	19 59 3.628	2.9329	+ 6 59 3.98	9.962
3 Ursæ Majoris (H.) S. P.	5.5	20 2 28.101	6.0411	+111 13 12.56	10.210
* θ Aquilæ	3.3	20 5 56.303	+ 3.0969	- 1 7 47.88	+ 10.482
* 31 Cygni	3.9	20 10 21.422	1.8894	+ 46 25 33.11	10.804
α ² Capricorni	3.7	20 12 17.074	+ 3.3316	- 12 52 1.53	10.942
κ Cephei (<i>pr.</i>)	4.4	20 12 23.383	- 1.9340	+ 77 23 53.50	10.978
α Pavonis	2.1	20 17 25.672	+ 4.7802	- 57 4 4.65	11.226
γ Cygni	2.3	20 18 29.859	+ 2.1538	+ 39 55 25.37	+ 11.387
π Capricorni	5.1	20 21 22.147	3.4388	- 18 33 9.32	11.582
ε Delphini	4.0	20 28 14.694	+ 2.8671	+ 10 56 59.76	12.063
Groombridge 3241 . . .	6.5	20 30 27.327	- 0.2243	+ 72 10 45.66	12.219
* α Delphini	3.9	20 34 48.453	+ 2.7878	+ 15 32 42.54	12.541
* β Pavonis	3.4	20 35 35.271	+ 5.4664	- 66 34 35.39	+ 12.569
α Cygni	1.4	20 37 53.205	2.0445	+ 44 54 30.98	12.739
* φ Capricorni	4.3	20 39 56.307	3.5597	- 25 38 40.30	12.723
* ε Cygni	2.6	20 42 0.205	2.4279	+ 33 34 50.15	13.357
μ Aquarii	4.8	20 47 2.692	+ 3.2392	- 9 22 24.85	13.314
12 Year Catalogue, 1879 .	5.3	20 52 18.289	- 2.5697	+ 80 9 43.88	+ 13.665
ν Cygni	4.1	20 53 17.740	+ 2.2344	+ 40 46 0.23	13.740
σ ² Ursæ Majoris . S. P.	5.0	21 1 14.613	5.3460	+112 26 36.01	14.311
61 ¹ Cygni	5.4	21 2 14.063	2.6835	+ 38 14 16.38	17.551
ζ Cygni	3.3	21 8 30.544	2.5499	+ 29 48 0.87	14.628
* τ Cygni	3.8	21 10 38.391	+ 2.3937	+ 37 36 5.38	+ 15.278
α Cephei	2.6	21 16 5.874	1.4361	+ 62 8 41.53	15.183
ι Pegasi	4.3	21 17 16.566	2.7723	+ 19 21 34.20	15.258
* ζ Capricorni	3.8	21 20 43.829	3.4334	- 22 51 42.64	15.405
ι Draconis (H.) . S. P.	4.5	21 22 15.594	+ 8.9480	+ 98 12 50.96	+ 15.506

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1896.0. (January 0^d.133, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
α Ursæ Majoris . . . S. P.	4.8	21 25 17.093	+ 5.3898	+109 42 46.15	+ 15.593
β Aquarii	2.9	21 26 5.069	3.1613	- 6 1 43.39	15.681
β Cephei (<i>pr.</i>)	3.4	21 27 19.062	0.7918	+ 70 6 14.63	15.761
ξ Aquarii	4.8	21 32 12.978	3.1974	- 8 19 14.19	15.990
* 74 Cygni	5.0	21 32 46.822	2.4020	+ 39 56 46.00	16.066
* λ Octantis	5.4	21 34 56.760	+ 9.7155	- 83 11 49.75	+ 16.091
* ζ Chamæleontis . . . S. P.	5.2	21 36 56.940	- 1.5814	- 99 31 33.33	16.278
ϵ Pegasi	2.4	21 39 4.705	+ 2.9467	+ 9 23 53.46	16.373
η Cephei	4.8	21 40 24.033	0.8992	+ 70 49 57.30	16.543
* π Cygni	4.5	21 42 57.061	2.2138	+ 48 49 42.04	16.555
μ Capricorni	5.2	21 47 37.581	+ 3.2753	- 14 2 28.84	+ 16.797
* 16 Pegasi	5.1	21 48 19.788	2.7282	+ 25 26 8.89	16.834
79 Draconis	6.6	21 51 34.002	0.7260	+ 73 12 37.15	17.017
α Aquarii	3.0	22 0 26.543	3.0825	- 0 49 30.36	17.371
α Gruis	1.9	22 1 40.718	3.8030	- 47 27 52.15	17.266
* π Pegasi	4.3	22 5 22.098	+ 2.6606	+ 32 40 4.88	+ 17.593
32 Ursæ Majoris . . . S. P.	5.7	22 10 28.946	4.4134	+114 22 23.22	17.831
θ Aquarii	4.4	22 11 20.764	3.1686	- 8 18 4.11	17.816
* ν Octantis	6.2	22 11 43.262	12.9508	- 86 29 44.64	17.946
* γ Aquarii	4.0	22 16 17.065	3.1005	- 1 54 41.06	18.053
π Aquarii	4.6	22 19 57.966	+ 3.0645	+ 0 50 58.76	+ 18.168
* σ Aquarii	4.9	22 25 8.584	3.1777	- 11 12 36.35	18.331
9 Draconis S. P.	5.0	22 26 15.783	5.2448	+103 45 5.32	18.415
* α Lacertæ	3.9	22 27 0.350	2.4633	+ 49 44 51.71	18.424
η Aquarii	4.2	22 30 0.733	3.0834	- 0 39 12.72	18.469
226 Cephei (B.)	5.7	22 30 26.993	+ 1.0752	+ 75 41 25.55	+ 18.532
* 10 Lacertæ	5.0	22 34 35.657	2.6874	+ 38 30 32.30	18.679
* β Octantis	4.4	22 35 25.254	6.4420	- 81 55 35.16	18.704
ζ Pegasi	3.5	22 36 16.513	2.9911	+ 10 17 18.49	18.716
* λ Pegasi	4.1	22 41 31.271	2.8857	+ 23 1 6.10	18.884
ϵ Cephei	3.6	22 45 58.537	+ 2.1233	+ 65 39 11.93	+ 18.883
λ Aquarii	3.8	22 47 11.366	3.1324	- 8 7 58.62	19.084
* Groombr. 1706 . . . S. P.	6.3	22 51 38.095	4.9490	+101 40 21.67	19.196
α Pis. Aust. (<i>Fomalhaut</i>). . .	1.3	22 51 54.226	3.3234	- 30 10 24.32	19.003
* α Andromedæ	3.8	22 57 8.099	2.7511	+ 41 46 0.75	19.294
α Ursæ Majoris . . . S. P.	2.0	22 57 18.608	+ 3.7422	+117 41 15.23	+ 19.373
α Pegasi (<i>Markab</i>)	2.5	22 59 34.806	2.9853	+ 14 38 44.27	19.309
* φ Aquarii	4.3	23 8 56.211	3.1085	- 6 36 34.51	19.365
ν Cephei	5.1	23 14 21.339	2.4467	+ 67 32 33.26	19.674
* τ Pegasi	4.6	23 15 29.327	2.9643	+ 23 10 15.32	19.661
θ Piscium	4.3	23 22 41.529	+ 3.0413	+ 5 48 27.23	+ 19.731
λ Draconis S. P.	4.0	23 25 13.702	3.6142	+110 5 41.90	19.843
* λ Andromedæ	3.8	23 32 28.405	2.9240	+ 45 53 39.83	19.475
ϵ Piscium	4.3	23 34 36.060	3.0843	+ 5 3 45.30	19.486
γ Cephei	3.5	23 35 4.473	2.4203	+ 77 3 6.43	20.077
* γ^1 Aquarii	5.2	23 38 48.501	+ 3.1163	- 18 51 14.69	+ 19.962
* δ Sculptoris	4.6	23 43 30.569	3.1314	- 28 42 18.77	19.858
* γ^1 Octantis	5.2	23 45 59.434	3.6682	- 82 35 48.62	19.995
Groombridge 4163	6.6	23 49 46.420	2.8711	+ 73 49 53.50	20.023
ω Piscium	4.2	23 53 58.243	3.0787	+ 6 17 15.01	19.931
* 33 Piscium	4.7	24 0 0.736	+ 3.0708	- 6 17 21.26	+ 20.147

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	51 Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Jan.	^h ^m 1 20	+88 45	Jan.	^h ^m 6 52	+87 12	Jan.	^h ^m 18 5	+86 36	Jan.	^h ^m 19 25	+88 58
	^s	"		^s	"		^s	"		^s	"
0.3	47.30	36.9	0.5	18.79	44.3	0.9	24.98	34.8	1.0	24.46	44.7
1.3	46.32	37.1	1.5	18.97	44.7	1.9	24.94	34.4	2.0	23.89	44.4
2.3	45.29	37.2	2.5	19.12	45.0	2.9	24.94	34.1	3.0	23.36	44.0
3.3	44.22	37.3	3.5	19.24	45.4	3.9	24.96	33.7	4.0	22.91	43.7
4.3	43.14	37.4	4.5	19.31	45.7	4.9	24.98	33.3	5.0	22.56	43.3
5.3	42.09	37.5	5.5	19.38	46.1	5.9	25.04	33.0	6.0	22.30	43.0
6.3	41.09	37.6	6.5	19.41	46.4	6.9	25.09	32.6	7.0	22.09	42.6
7.3	40.14	37.6	7.5	19.43	46.7	7.9	25.16	32.3	8.0	21.89	42.3
8.3	39.25	37.7	8.5	19.47	47.0	8.9	25.21	32.0	9.0	21.68	42.1
9.3	38.38	37.7	9.5	19.50	47.3	9.9	25.27	31.7	10.0	21.44	41.8
10.2	37.54	37.8	10.5	19.55	47.6	10.9	25.31	31.4	11.0	21.17	41.5
11.2	36.68	37.9	11.5	19.63	47.8	11.9	25.35	31.1	12.0	20.88	41.2
12.2	35.79	37.9	12.5	19.69	48.1	12.9	25.39	30.8	13.0	20.56	40.9
13.2	34.86	38.0	13.5	19.77	48.4	13.9	25.44	30.5	13.9	20.27	40.6
14.2	33.88	38.1	14.5	19.84	48.8	14.9	25.50	30.2	14.9	20.01	40.2
15.2	32.84	38.1	15.5	19.86	49.1	15.9	25.59	29.8	15.9	19.80	39.9
16.2	31.75	38.2	16.5	19.86	49.5	16.9	25.72	29.4	16.9	19.68	39.5
17.2	30.65	38.2	17.5	19.83	49.8	17.9	25.84	29.1	17.9	19.65	39.2
18.2	29.55	38.2	18.5	19.76	50.2	18.9	25.99	28.7	18.9	19.70	38.8
19.2	28.50	38.1	19.5	19.67	50.5	19.9	26.17	28.4	19.9	19.81	38.5
20.2	27.49	38.1	20.4	19.56	50.8	20.9	26.34	28.1	20.9	19.95	38.2
21.2	26.54	38.1	21.4	19.45	51.1	21.9	26.51	27.9	21.9	20.12	37.9
22.2	25.62	38.0	22.4	19.35	51.4	22.9	26.68	27.6	22.9	20.28	37.6
23.2	24.75	38.0	23.4	19.27	51.7	23.9	26.82	27.3	23.9	20.38	37.3
24.2	23.87	37.9	24.4	19.21	52.0	24.9	26.96	27.1	24.9	20.47	37.0
25.2	23.03	37.9	25.4	19.15	52.2	25.9	27.10	26.8	25.9	20.52	36.7
26.2	22.15	37.9	26.4	19.10	52.5	26.9	27.22	26.5	26.9	20.53	36.4
27.2	21.22	37.9	27.4	19.04	52.8	27.9	27.37	26.2	27.9	20.56	36.1
28.2	20.24	37.9	28.4	18.98	53.1	28.9	27.54	25.9	28.9	20.63	35.7
29.2	19.21	37.8	29.4	18.90	53.4	29.9	27.71	25.6	29.9	20.77	35.4
30.2	18.15	37.8	30.4	18.78	53.8	30.9	27.91	25.2	30.9	20.98	35.0
31.2	17.10	37.7	31.4	18.64	54.1	31.9	28.13	24.9	31.9	21.28	34.7
32.2	16.06	37.6	32.4	18.44	54.4	32.9	28.37	24.6	32.9	21.64	34.4

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
Feb.	h m	° ' "	Feb.	h m	° ' "	Feb.	h m	° ' "	Feb.	h m	° ' "
	1 19	+88 45		6 52	+87 12		18 5	+86 36		19 25	+88 58
1.2	76.06	37.6	1.4	18.44	54.4	1.9	28.37	24.6	1.9	21.64	34.4
2.2	75.07	37.5	2.4	18.24	54.7	2.9	28.60	24.4	2.9	22.08	34.0
3.2	74.12	37.4	3.4	18.03	55.0	3.9	28.84	24.1	3.9	22.52	33.7
4.2	73.25	37.3	4.4	17.82	55.3	4.9	29.07	23.9	4.9	22.98	33.4
5.2	72.45	37.1	5.4	17.61	55.5	5.9	29.31	23.7	5.9	23.43	33.2
6.2	71.66	37.0	6.4	17.41	55.7	6.9	29.54	23.5	6.9	23.85	32.9
7.2	70.88	36.9	7.4	17.24	56.0	7.9	29.75	23.3	7.9	24.22	32.7
8.2	70.10	36.8	8.4	17.07	56.2	8.9	29.97	23.1	8.9	24.58	32.4
9.2	69.28	36.7	9.4	16.90	56.5	9.9	30.18	22.8	9.9	24.94	32.1
10.2	68.42	36.6	10.4	16.74	56.7	10.9	30.41	22.6	10.9	25.32	31.8
11.2	67.53	36.5	11.4	16.54	57.0	11.9	30.66	22.3	11.9	25.75	31.5
12.2	66.57	36.3	12.4	16.32	57.3	12.9	30.94	22.1	12.9	26.24	31.2
13.2	65.61	36.2	13.4	16.07	57.6	13.9	31.23	21.8	13.9	26.81	30.9
14.2	64.66	36.0	14.4	15.80	57.9	14.9	31.53	21.6	14.9	27.49	30.6
15.1	63.73	35.8	15.4	15.47	58.2	15.9	31.87	21.4	15.9	28.20	30.3
16.1	62.87	35.6	16.4	15.15	58.4	16.8	32.19	21.2	16.9	28.98	30.0
17.1	62.08	35.4	17.4	14.82	58.6	17.8	32.51	21.0	17.9	29.77	29.7
18.1	61.32	35.2	18.4	14.49	58.8	18.8	32.84	20.9	18.9	30.54	29.5
19.1	60.64	35.0	19.4	14.18	59.0	19.8	33.14	20.7	19.9	31.28	29.3
20.1	60.00	34.8	20.4	13.88	59.2	20.8	33.43	20.6	20.9	31.97	29.1
21.1	59.34	34.6	21.4	13.61	59.4	21.8	33.70	20.4	21.9	32.63	28.9
22.1	58.71	34.4	22.4	13.36	59.6	22.8	33.98	20.3	22.9	33.27	28.6
23.1	58.02	34.2	23.4	13.10	59.8	23.8	34.24	20.1	23.9	33.87	28.4
24.1	57.31	34.1	24.3	12.84	60.0	24.8	34.54	19.9	24.9	34.51	28.2
25.1	56.55	33.9	25.3	12.57	60.2	25.8	34.83	19.7	25.9	35.20	27.9
26.1	55.77	33.7	26.3	12.27	60.4	26.8	35.14	19.5	26.9	35.95	27.6
27.1	54.97	33.5	27.3	11.94	60.6	27.8	35.48	19.4	27.9	36.76	27.4
28.1	54.22	33.3	28.3	11.56	60.9	28.8	35.84	19.2	28.9	37.67	27.1
29.1	53.49	33.0	29.3	11.19	61.1	29.8	36.20	19.1	29.9	38.63	26.9
30.1	52.83	32.7	30.3	10.79	61.2	30.8	36.55	19.0	30.9	39.63	26.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	51 Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Mar.	h m	° '	Mar.	h m	° '	Mar.	h m	° '	Mar.	h m	° '
	1 19	+88 45		6 51	+87 13		18 5	+86 36		19 25	+88 58
	s	"		s	"		s	"		s	"
1.1	52.83	32.7	1.3	70.79	1.2	1.8	36.55	19.0	1.9	39.63	26.7
2.1	52.24	32.5	2.3	70.38	1.4	2.8	36.91	18.9	2.9	40.63	26.5
3.1	51.72	32.2	3.3	70.00	1.5	3.8	37.26	18.8	3.9	41.60	26.3
4.1	51.25	31.9	4.3	69.63	1.6	4.8	37.59	18.8	4.9	42.54	26.2
5.1	50.81	31.7	5.3	69.27	1.7	5.8	37.91	18.7	5.9	43.45	26.0
6.1	50.38	31.5	6.3	68.95	1.8	6.8	38.23	18.6	6.9	44.31	25.9
7.1	49.92	31.2	7.3	68.61	2.0	7.8	38.54	18.6	7.9	45.16	25.7
8.1	49.45	31.0	8.3	68.29	2.1	8.8	38.84	18.5	8.9	45.99	25.5
9.1	48.92	30.8	9.3	67.97	2.2	9.8	39.18	18.4	9.9	46.87	25.4
10.1	48.36	30.5	10.3	67.60	2.4	10.8	39.53	18.3	10.9	47.80	25.2
11.1	47.78	30.3	11.3	67.21	2.6	11.8	39.90	18.2	11.8	48.81	25.0
12.1	47.20	30.0	12.3	66.81	2.7	12.8	40.28	18.1	12.8	49.88	24.8
13.1	46.66	29.7	13.3	66.37	2.8	13.8	40.66	18.0	13.8	51.02	24.6
14.1	46.17	29.4	14.3	65.91	3.0	14.8	41.07	18.0	14.8	52.20	24.4
15.1	45.74	29.1	15.3	65.44	3.1	15.8	41.46	18.0	15.8	53.40	24.3
16.1	45.40	28.7	16.3	64.99	3.1	16.8	41.84	18.0	16.8	54.59	24.2
17.1	45.11	28.4	17.3	64.54	3.2	17.8	42.21	18.0	17.8	55.75	24.1
18.1	44.87	28.1	18.3	64.13	3.2	18.8	42.57	18.0	18.8	56.84	24.0
19.1	44.66	27.8	19.3	63.74	3.3	19.8	42.90	18.1	19.8	57.90	24.0
20.1	44.45	27.5	20.3	63.37	3.3	20.8	43.22	18.1	20.8	58.89	23.9
21.1	44.24	27.3	21.3	63.00	3.3	21.8	43.54	18.1	21.8	59.88	23.8
22.0	43.98	27.0	22.3	62.64	3.4	22.7	43.88	18.1	22.8	60.83	23.7
23.0	43.70	26.8	23.3	62.28	3.4	23.7	44.21	18.1	23.8	61.83	23.6
24.0	43.39	26.5	24.3	61.91	3.5	24.7	44.55	18.0	24.8	62.88	23.5
25.0	43.06	26.2	25.3	61.50	3.6	25.7	44.90	18.0	25.8	63.98	23.4
26.0	42.76	25.9	26.3	61.08	3.6	26.7	45.27	18.1	26.8	65.13	23.3
27.0	42.50	25.6	27.3	60.62	3.7	27.7	45.66	18.1	27.8	66.35	23.2
28.0	42.27	25.3	28.3	60.16	3.7	28.7	46.04	18.2	28.8	67.61	23.1
29.0	42.15	24.9	29.3	59.69	3.7	29.7	46.41	18.2	29.8	68.86	23.0
30.0	42.09	24.5	30.3	59.23	3.7	30.7	46.77	18.3	30.8	70.11	23.0
31.0	42.08	24.3	31.3	58.80	3.7	31.7	47.12	18.4	31.8	71.30	23.0
32.0	42.13	24.0	32.2	58.38	3.6	32.7	47.45	18.5	32.8	72.44	23.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hav.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
Apr.	h m	° ' "	Apr.	h m	° ' "	Apr.	h m	° ' "	Apr.	h m	° ' "
	1 19	+88 45		6 51	+87 13		18 5	+86 36		19 26	+88 58
1.0	42.13	24.0	1.2	58.38	3.6	1.7	47.45	18.5	1.8	12.44	23.0
2.0	42.18	23.6	2.2	58.00	3.5	2.7	47.77	18.7	2.8	13.51	23.1
3.0	42.24	23.3	3.2	57.62	3.5	3.7	48.07	18.8	3.8	14.55	23.1
4.0	42.27	23.1	4.2	57.26	3.5	4.7	48.38	18.9	4.8	15.58	23.1
5.0	42.26	22.8	5.2	56.90	3.5	5.7	48.69	18.9	5.8	16.61	23.0
6.0	42.21	22.5	6.2	56.51	3.4	6.7	49.02	19.0	6.8	17.67	23.0
7.0	42.16	22.2	7.2	56.11	3.4	7.7	49.35	19.1	7.8	18.79	23.0
8.0	42.07	21.9	8.2	55.70	3.4	8.7	49.70	19.1	8.8	19.97	22.9
9.0	42.02	21.6	9.2	55.25	3.4	9.7	50.07	19.2	9.8	21.21	22.9
10.0	42.03	21.3	10.2	54.79	3.4	10.7	50.44	19.4	10.8	22.49	22.9
10.9	42.09	20.9	11.2	54.33	3.3	11.7	50.80	19.5	11.8	23.78	22.9
11.9	42.23	20.6	12.2	53.87	3.2	12.7	51.14	19.7	12.8	25.07	23.0
12.9	42.42	20.3	13.2	53.42	3.1	13.7	51.47	19.9	13.8	26.32	23.1
13.9	42.69	19.9	14.2	53.02	3.0	14.7	51.78	20.1	14.8	27.50	23.2
14.9	42.99	19.6	15.2	52.62	2.9	15.7	52.06	20.2	15.8	28.63	23.2
15.9	43.30	19.3	16.2	52.27	2.7	16.7	52.34	20.4	16.8	29.69	23.3
16.9	43.61	19.1	17.2	51.94	2.6	17.7	52.59	20.6	17.7	30.70	23.4
17.9	43.89	18.8	18.2	51.60	2.5	18.7	52.86	20.8	18.7	31.69	23.5
18.9	44.13	18.6	19.2	51.27	2.4	19.7	53.12	20.9	19.7	32.67	23.6
19.9	44.34	18.3	20.2	50.94	2.3	20.7	53.39	21.1	20.7	33.70	23.6
20.9	44.52	18.0	21.2	50.59	2.2	21.7	53.67	21.2	21.7	34.75	23.7
21.9	44.73	17.8	22.2	50.22	2.1	22.7	53.96	21.4	22.7	35.85	23.7
22.9	44.96	17.5	23.2	49.82	2.0	23.7	54.27	21.5	23.7	37.01	23.8
23.9	45.22	17.2	24.2	49.43	1.9	24.7	54.56	21.7	24.7	38.19	23.9
24.9	45.55	16.9	25.2	49.02	1.8	25.7	54.86	22.0	25.7	39.39	24.0
25.9	45.97	16.5	26.2	48.62	1.6	26.7	55.14	22.2	26.7	40.54	24.1
26.9	46.45	16.2	27.2	48.25	1.4	27.7	55.40	22.5	27.7	41.67	24.3
27.9	46.97	15.9	28.2	47.89	1.2	28.6	55.65	22.7	28.7	42.72	24.5
28.9	47.53	15.7	29.2	47.56	1.0	29.6	55.88	23.0	29.7	43.72	24.6
29.9	48.08	15.4	30.2	47.28	0.8	30.6	56.09	23.2	30.7	44.66	24.8
30.9	48.63	15.2	31.2	46.98	0.6	31.6	56.29	23.5	31.7	45.54	25.0
31.9	49.12	14.9									

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	51 Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
May	h m	° ' "	May	h m	° ' "	May	h m	° ' "	May	h m	° ' "
	1 19	+88 45		6 51	+87 12		18 5	+86 36		19 26	+88 58
	"	"		"	"		"	"		"	"
1.9	49.12	14.9	1.2	46.98	60.6	1.6	56.29	23.5	1.7	45.54	25.0
2.9	49.57	14.7	2.2	46.71	60.4	2.6	56.50	23.7	2.7	46.43	25.1
3.9	50.00	14.5	3.2	46.43	60.2	3.6	56.71	23.9	3.7	47.31	25.2
4.9	50.40	14.2	4.2	46.14	60.1	4.6	56.93	24.1	4.6	48.23	25.4
5.9	50.82	14.0	5.2	45.81	59.9	5.6	57.18	24.3	5.6	49.21	25.5
6.9	51.26	13.7	6.2	45.49	59.8	6.6	57.42	24.5	6.6	50.24	25.6
7.9	51.76	13.4	7.1	45.14	59.6	7.6	57.67	24.8	7.6	51.30	25.8
8.9	52.34	13.1	8.1	44.79	59.4	8.6	57.92	25.0	8.6	52.38	26.0
9.9	52.97	12.8	9.1	44.42	59.2	9.6	58.17	25.3	9.6	53.45	26.2
10.9	53.67	12.6	10.1	44.10	58.9	10.6	58.38	25.6	10.6	54.50	26.4
11.9	54.41	12.4	11.1	43.79	58.7	11.6	58.59	25.9	11.6	55.48	26.6
12.9	55.17	12.1	12.1	43.52	58.4	12.6	58.76	26.2	12.6	56.38	26.8
13.9	55.92	11.9	13.1	43.28	58.2	13.6	58.90	26.5	13.6	57.20	27.1
14.9	56.65	11.8	14.1	43.08	57.9	14.6	59.04	26.8	14.6	57.96	27.3
15.9	57.34	11.6	15.1	42.87	57.7	15.6	59.17	27.1	15.6	58.67	27.6
16.9	57.98	11.4	16.1	42.68	57.4	16.6	59.30	27.4	16.6	59.37	27.8
17.9	58.62	11.2	17.1	42.49	57.2	17.6	59.43	27.6	17.6	60.08	28.0
18.9	59.22	11.1	18.1	42.28	57.0	18.6	59.57	27.9	18.6	60.81	28.2
19.9	59.85	10.9	19.1	42.07	56.8	19.6	59.72	28.1	19.6	61.59	28.3
20.9	60.52	10.6	20.1	41.83	56.6	20.6	59.87	28.4	20.6	62.39	28.5
21.9	61.24	10.4	21.1	41.57	56.3	21.6	60.04	28.7	21.6	63.23	28.8
22.9	62.01	10.2	22.1	41.32	56.1	22.6	60.18	29.0	22.6	64.07	29.0
23.9	62.86	10.0	23.1	41.08	55.8	23.6	60.32	29.3	23.6	64.90	29.3
24.9	63.77	9.8	24.1	40.84	55.5	24.6	60.45	29.7	24.6	65.68	29.5
25.9	64.70	9.6	25.1	40.65	55.2	25.6	60.54	30.0	25.6	66.39	29.8
26.9	65.63	9.5	26.1	40.47	54.9	26.6	60.62	30.4	26.6	67.03	30.1
27.9	66.55	9.3	27.1	40.32	54.6	27.6	60.68	30.7	27.6	67.60	30.4
28.9	67.43	9.2	28.1	40.22	54.3	28.6	60.73	31.0	28.6	68.11	30.7
29.9	68.26	9.1	29.1	40.11	54.0	29.6	60.77	31.3	29.6	68.59	31.0
30.9	69.06	9.0	30.1	40.01	53.7	30.6	60.81	31.6	30.6	69.07	31.2
31.9	69.80	8.8	31.1	39.90	53.5	31.6	60.87	31.9	31.6	69.57	31.5
32.9	70.56	8.7	32.1	39.77	53.2	32.6	60.95	32.2	32.6	70.10	31.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
June	^h ^m 1 20	+88 45	June	^h ^m 6 51	+87 12	June	^h ^m 18 5	+86 36	June	^h ^m 19 27	+88 58
	^s	"		^s	"		^s	"		^s	"
1.9	10.56	8.7	1.1	39.77	53.2	1.6	60.95	32.2	1.6	10.10	31.7
2.9	11.31	8.6	2.1	39.62	52.9	2.6	61.03	32.5	2.6	10.68	32.0
3.8	12.12	8.4	3.1	39.48	52.7	3.5	61.10	32.8	3.6	11.30	32.2
4.8	12.97	8.2	4.1	39.30	52.4	4.5	61.19	33.1	4.6	11.95	32.5
5.8	13.91	8.1	5.1	39.13	52.1	5.5	61.27	33.4	5.6	12.58	32.8
6.8	14.88	8.0	6.1	38.98	51.8	6.5	61.33	33.8	6.6	13.19	33.1
7.8	15.90	7.8	7.1	38.85	51.5	7.5	61.37	34.1	7.6	13.74	33.4
8.8	16.95	7.7	8.1	38.74	51.1	8.5	61.38	34.5	8.6	14.22	33.7
9.8	17.99	7.6	9.1	38.67	50.8	9.5	61.37	34.9	9.6	14.61	34.1
10.8	19.02	7.6	10.1	38.65	50.5	10.5	61.34	35.2	10.6	14.93	34.4
11.8	20.01	7.5	11.1	38.64	50.1	11.5	61.30	35.5	11.6	15.17	34.7
12.8	20.94	7.5	12.1	38.64	49.8	12.5	61.26	35.8	12.6	15.39	35.0
13.8	21.82	7.5	13.0	38.66	49.5	13.5	61.21	36.1	13.6	15.60	35.3
14.8	22.69	7.4	14.0	38.66	49.2	14.5	61.18	36.4	14.6	15.83	35.6
15.8	23.55	7.4	15.0	38.64	49.0	15.5	61.15	36.7	15.6	16.09	35.9
16.8	24.43	7.3	16.0	38.62	48.7	16.5	61.12	37.0	16.6	16.39	36.2
17.8	25.36	7.2	17.0	38.58	48.4	17.5	61.11	37.3	17.6	16.71	36.5
18.8	26.33	7.2	18.0	38.51	48.1	18.5	61.09	37.6	18.6	17.05	36.8
19.8	27.38	7.1	19.0	38.49	47.8	19.5	61.06	38.0	19.6	17.37	37.1
20.8	28.48	7.0	20.0	38.45	47.4	20.5	61.00	38.3	20.6	17.66	37.5
21.8	29.60	7.0	21.0	38.44	47.1	21.5	60.94	38.7	21.6	17.88	37.8
22.8	30.74	7.0	22.0	38.47	46.7	22.5	60.85	39.1	22.6	18.04	38.2
23.8	31.84	6.9	23.0	38.53	46.4	23.5	60.74	39.4	23.6	18.09	38.5
24.8	32.91	7.0	24.0	38.61	46.0	24.5	60.62	39.8	24.6	18.10	38.9
25.8	33.94	7.0	25.0	38.70	45.7	25.5	60.49	40.1	25.6	18.05	39.2
26.8	34.92	7.0	26.0	38.82	45.4	26.5	60.35	40.4	26.6	17.98	39.6
27.8	35.85	7.1	27.0	38.92	45.1	27.5	60.23	40.7	27.6	17.94	39.9
28.8	36.76	7.1	28.0	39.01	44.8	28.5	60.12	41.0	28.6	17.91	40.2
29.8	37.65	7.1	29.0	39.08	44.5	29.5	60.02	41.2	29.5	17.92	40.5
30.8	38.58	7.1	30.0	39.14	44.2	30.5	59.92	41.5	30.5	17.98	40.8
31.8	39.55	7.1	31.0	39.17	43.9	31.5	59.84	41.8	31.5	18.07	41.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
July	h m	°	July	h m	°	July	h m	°	July	h m	°
	1 20	+88 45		6 51	+87 12		18 5	+86 36		19 27	+88 58
	s	"		s	"		s	"		s	"
1.8	39.55	7.1	1.0	39.17	43.93	1.5	59.84	41.8	1.5	18.07	41.1
2.8	40.58	7.0	2.0	39.21	43.62	2.5	59.74	42.1	2.5	18.18	41.4
3.8	41.66	7.0	3.0	39.26	43.29	3.5	59.63	42.5	3.5	18.24	41.7
4.8	42.78	7.1	3.9	39.33	42.94	4.5	59.51	42.8	4.5	18.26	42.1
5.8	43.93	7.1	4.9	39.42	42.60	5.5	59.36	43.2	5.5	18.21	42.5
6.8	45.07	7.2	5.9	39.55	42.25	6.5	59.18	43.5	6.5	18.08	42.9
7.8	46.20	7.3	6.9	39.72	41.89	7.5	58.99	43.8	7.5	17.88	43.3
8.8	47.28	7.4	7.9	39.91	41.55	8.5	58.78	44.1	8.5	17.60	43.6
9.8	48.30	7.5	8.9	40.12	41.23	9.5	58.57	44.4	9.5	17.26	44.0
10.7	49.28	7.6	9.9	40.32	40.93	10.5	58.37	44.7	10.5	16.92	44.3
11.7	50.21	7.7	10.9	40.54	40.63	11.5	58.15	45.0	11.5	16.58	44.6
12.7	51.11	7.8	11.9	40.74	40.35	12.4	57.95	45.2	12.5	16.27	44.9
13.7	52.04	7.9	12.9	40.93	40.08	13.4	57.76	45.5	13.5	15.99	45.2
14.7	52.98	7.9	13.9	41.10	39.80	14.4	57.57	45.8	14.5	15.76	45.5
15.7	53.97	8.0	14.9	41.25	39.51	15.4	57.40	46.0	15.5	15.53	45.8
16.7	55.00	8.1	15.9	41.40	39.20	16.4	57.21	46.3	16.5	15.31	46.1
17.7	56.10	8.2	16.9	41.57	38.88	17.4	57.00	46.7	17.5	15.05	46.5
18.7	57.23	8.3	17.9	41.75	38.54	18.4	56.78	47.0	18.5	14.75	46.9
19.7	58.36	8.4	18.9	41.98	38.19	19.4	56.52	47.3	19.5	14.36	47.2
20.7	59.49	8.5	19.9	42.22	37.83	20.4	56.26	47.6	20.5	13.91	47.6
21.7	60.57	8.7	20.9	42.49	37.51	21.4	55.98	47.9	21.5	13.36	48.0
22.7	61.61	8.9	21.9	42.79	37.19	22.4	55.71	48.2	22.5	12.77	48.3
23.7	62.58	9.0	22.9	43.10	36.90	23.4	55.41	48.4	23.5	12.15	48.6
24.7	63.51	9.2	23.9	43.41	36.62	24.4	55.13	48.7	24.5	11.52	48.9
25.7	64.38	9.4	24.9	43.70	36.36	25.4	54.85	48.9	25.5	10.93	49.2
26.7	65.25	9.5	25.9	43.98	36.11	26.4	54.61	49.1	26.5	10.39	49.5
27.7	66.11	9.7	26.9	44.23	35.86	27.4	54.36	49.3	27.5	9.87	49.8
28.7	67.01	9.8	27.9	44.48	35.60	28.4	54.11	49.6	28.5	9.39	50.1
29.7	67.95	10.0	28.9	44.71	35.33	29.4	53.87	49.8	29.5	8.93	50.4
30.7	68.97	10.1	29.9	44.94	35.04	30.4	53.62	50.1	30.5	8.47	50.7
31.7	70.00	10.2	30.9	45.20	34.73	31.4	53.36	50.4	31.5	7.98	51.1
32.7	71.06	10.4	31.9	45.47	34.43	32.4	53.06	50.6	32.5	7.42	51.4

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
Aug.	h m I 21	+88 45	Aug.	h m 6 51	+87 12	Aug.	h m 18 5	+86 36	Aug.	h m 19 26	+88 58
	"	"		"	"		"	"		"	"
1.7	11.06	10.4	1.9	45.78	34.1	1.4	53.06	50.6	1.5	67.42	51.4
2.7	12.14	10.6	2.9	46.13	33.8	2.4	52.76	50.9	2.4	66.77	51.8
3.7	13.17	10.8	3.9	46.50	33.5	3.4	52.42	51.2	3.4	66.06	52.1
4.7	14.18	11.1	4.9	46.88	33.2	4.4	52.07	51.4	4.4	65.28	52.4
5.7	15.12	11.3	5.9	47.27	33.0	5.4	51.73	51.6	5.4	64.44	52.8
6.7	16.02	11.5	6.9	47.67	32.7	6.4	51.37	51.8	6.4	63.57	53.1
7.7	16.86	11.8	7.9	48.06	32.5	7.4	51.02	52.0	7.4	62.70	53.4
8.7	17.67	12.0	8.9	48.43	32.3	8.4	50.68	52.2	8.4	61.86	53.6
9.7	18.46	12.3	9.9	48.78	32.0	9.4	50.34	52.4	9.4	61.05	53.9
10.7	19.27	12.5	10.9	49.12	31.8	10.4	50.02	52.6	10.4	60.27	54.2
11.7	20.11	12.7	11.9	49.44	31.6	11.4	49.69	52.8	11.4	59.54	54.4
12.7	20.99	12.9	12.9	49.77	31.3	12.4	49.39	53.0	12.4	58.80	54.7
13.7	21.93	13.1	13.9	50.12	31.0	13.4	49.06	53.2	13.4	58.05	55.0
14.7	22.90	13.3	14.9	50.50	30.8	14.4	48.72	53.4	14.4	57.26	55.3
15.6	23.87	13.6	15.9	50.89	30.5	15.4	48.35	53.6	15.4	56.42	55.6
16.6	24.86	13.8	16.9	51.32	30.2	16.3	47.97	53.9	16.4	55.48	56.0
17.6	25.80	14.1	17.9	51.77	29.9	17.3	47.58	54.1	17.4	54.48	56.3
18.6	26.69	14.4	18.9	52.23	29.7	18.3	47.17	54.3	18.4	53.42	56.6
19.6	27.51	14.7	19.9	52.69	29.5	19.3	46.77	54.4	19.4	52.32	56.9
20.6	28.27	15.0	20.9	53.16	29.3	20.3	46.37	54.6	20.4	51.21	57.1
21.6	28.98	15.3	21.9	53.58	29.1	21.3	45.97	54.7	21.4	50.11	57.4
22.6	29.65	15.6	22.9	54.01	29.0	22.3	45.60	54.8	22.4	49.08	57.6
23.6	30.31	15.8	23.9	54.40	28.8	23.3	45.25	54.9	23.4	48.08	57.8
24.6	31.00	16.1	24.8	54.78	28.6	24.3	44.89	55.0	24.4	47.13	58.0
25.6	31.72	16.3	25.8	55.16	28.4	25.3	44.53	55.2	25.4	46.21	58.3
26.6	32.49	16.6	26.8	55.54	28.2	26.3	44.19	55.3	26.4	45.30	58.5
27.6	33.29	16.9	27.8	55.94	28.0	27.3	43.83	55.5	27.4	44.37	58.8
28.6	34.11	17.1	28.8	56.38	27.7	28.3	43.45	55.7	28.4	43.39	59.1
29.6	34.96	17.4	29.8	56.84	27.5	29.3	43.06	55.9	29.4	42.33	59.3
30.6	35.78	17.7	30.8	57.34	27.3	30.3	42.63	56.0	30.4	41.21	59.6
31.6	36.57	18.1	31.8	57.86	27.1	31.3	42.20	56.1	31.4	40.03	59.9
32.6	37.31	18.4	32.8	58.38	26.9	32.3	41.75	56.3	32.4	38.77	60.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Sept.	h m 1 21	+88 45	Sept.	h m 6 51	+87 12	Sept.	h m 18 5	+86 36	Sept.	h m 19 26	+88 59
	"	"		"	"		"	"		"	"
1.6	37.31	18.4	1.8	58.38	26.9	1.3	41.75	56.3	1.4	38.77	0.1
2.6	37.97	18.8	2.8	58.90	26.7	2.3	41.31	56.4	2.4	37.50	0.4
3.6	38.57	19.2	3.8	59.41	26.6	3.3	40.87	56.5	3.4	36.20	0.6
4.6	39.14	19.5	4.8	59.91	26.5	4.3	40.46	56.5	4.4	34.94	0.8
5.6	39.67	19.8	5.8	60.40	26.3	5.3	40.04	56.6	5.4	33.72	1.0
6.6	40.21	20.1	6.8	60.87	26.2	6.3	39.63	56.6	6.4	32.52	1.1
7.6	40.76	20.5	7.8	61.31	26.1	7.3	39.23	56.7	7.4	31.38	1.3
8.6	41.35	20.8	8.8	61.75	25.9	8.3	38.84	56.8	8.3	30.27	1.5
9.6	41.99	21.1	9.8	62.21	25.8	9.3	38.45	56.9	9.3	29.14	1.7
10.6	42.68	21.4	10.8	62.68	25.6	10.3	38.04	57.0	10.3	28.00	1.9
11.6	43.37	21.7	11.8	63.18	25.4	11.3	37.62	57.1	11.3	26.80	2.2
12.6	44.06	22.0	12.8	63.69	25.2	12.3	37.18	57.2	12.3	25.55	2.4
13.6	44.74	22.4	13.8	64.25	25.1	13.3	36.73	57.3	13.3	24.22	2.6
14.6	45.35	22.8	14.8	64.82	24.9	14.3	36.27	57.4	14.3	22.84	2.8
15.6	45.91	23.2	15.8	65.38	24.8	15.3	35.80	57.4	15.3	21.39	3.0
16.6	46.39	23.5	16.8	65.94	24.7	16.3	35.33	57.4	16.3	19.95	3.2
17.6	46.82	23.9	17.8	66.48	24.6	17.3	34.88	57.4	17.3	18.51	3.4
18.6	47.18	24.3	18.8	67.00	24.6	18.3	34.43	57.4	18.3	17.11	3.5
19.6	47.54	24.6	19.8	67.49	24.5	19.3	34.03	57.4	19.3	15.78	3.6
20.6	47.89	25.0	20.8	67.98	24.4	20.3	33.63	57.4	20.3	14.50	3.7
21.5	48.26	25.3	21.8	68.44	24.3	21.3	33.23	57.4	21.3	13.25	3.9
22.5	48.69	25.6	22.8	68.89	24.2	22.3	32.83	57.5	22.3	12.04	4.0
23.5	49.16	25.9	23.8	69.37	24.1	23.3	32.45	57.5	23.3	10.83	4.1
24.5	49.64	26.3	24.8	69.87	24.0	24.3	32.03	57.5	24.3	9.59	4.3
25.5	50.14	26.6	25.8	70.39	23.9	25.2	31.60	57.6	25.3	8.29	4.5
26.5	50.65	27.0	26.8	70.95	23.8	26.2	31.17	57.6	26.3	6.93	4.7
27.5	51.11	27.4	27.8	71.53	23.7	27.2	30.70	57.6	27.3	5.50	4.8
28.5	51.52	27.8	28.8	72.12	23.6	28.2	30.24	57.6	28.3	4.02	5.0
29.5	51.86	28.2	29.8	72.70	23.6	29.2	29.75	57.6	29.3	2.50	5.1
30.5	52.14	28.7	30.8	73.29	23.6	30.2	29.29	57.5	30.3	0.96	5.2
31.5	52.36	29.1	31.8	73.85	23.5	31.2	28.83	57.5	31.3	59.46	5.3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hav.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
Oct.	h m	°	Oct.	h m	°	Oct.	h m	°	Oct.	h m	°
	I 21	+88 45		6 52	+87 12		18 5	+86 36		19 25	+88 59
	"	"		"	"		"	"		"	"
1.5	52.36	29.1	1.8	13.85	23.5	1.2	28.83	57.5	1.3	59.46	5.3
2.5	52.55	29.5	2.7	14.40	23.5	2.2	28.40	57.4	2.3	57.98	5.3
3.5	52.72	29.8	3.7	14.92	23.5	3.2	27.97	57.3	3.3	56.57	5.4
4.5	52.91	30.2	4.7	15.43	23.5	4.2	27.56	57.2	4.3	55.20	5.4
5.5	53.12	30.6	5.7	15.91	23.5	5.2	27.15	57.2	5.3	53.85	5.5
6.5	53.36	30.9	6.7	16.41	23.5	6.2	26.75	57.1	6.3	52.53	5.6
7.5	53.65	31.3	7.7	16.92	23.4	7.2	26.34	57.1	7.3	51.21	5.7
8.5	53.97	31.6	8.7	17.46	23.4	8.2	25.92	57.1	8.3	49.83	5.8
9.5	54.28	32.0	9.7	18.00	23.3	9.2	25.48	57.0	9.3	48.42	5.9
10.5	54.57	32.4	10.7	18.57	23.3	10.2	25.03	57.0	10.3	46.94	6.0
11.5	54.82	32.8	11.7	19.16	23.2	11.2	24.58	57.0	11.3	45.41	6.1
12.5	55.01	33.2	12.7	19.75	23.2	12.2	24.13	56.9	12.3	43.85	6.1
13.5	55.13	33.7	13.7	20.33	23.3	13.2	23.66	56.8	13.3	42.26	6.2
14.5	55.19	34.1	14.7	20.91	23.3	14.2	23.22	56.7	14.3	40.70	6.2
15.5	55.17	34.5	15.7	21.45	23.4	15.2	22.78	56.5	15.3	39.16	6.2
16.5	55.13	34.9	16.7	21.97	23.4	16.2	22.39	56.4	16.2	37.69	6.2
17.5	55.08	35.2	17.7	22.47	23.5	17.2	22.00	56.2	17.2	36.27	6.2
18.5	55.04	35.6	18.7	22.95	23.5	18.2	21.61	56.1	18.2	34.92	6.2
19.5	55.05	35.9	19.7	23.41	23.6	19.2	21.25	56.0	19.2	33.61	6.2
20.5	55.09	36.3	20.7	23.89	23.6	20.2	20.89	55.9	20.2	32.32	6.2
21.5	55.17	36.6	21.7	24.38	23.6	21.2	20.52	55.8	21.2	31.02	6.2
22.5	55.24	37.0	22.7	24.89	23.7	22.2	20.13	55.6	22.2	29.69	6.3
23.5	55.34	37.4	23.7	25.42	23.7	23.2	19.73	55.6	23.2	28.28	6.3
24.5	55.40	37.8	24.7	25.99	23.7	24.2	19.31	55.5	24.2	26.82	6.3
25.5	55.43	38.2	25.7	26.56	23.7	25.2	18.89	55.3	25.2	25.30	6.3
26.5	55.39	38.6	26.7	27.13	23.8	26.2	18.46	55.2	26.2	23.73	6.3
27.5	55.27	39.0	27.7	27.70	23.9	27.2	18.04	55.0	27.2	22.17	6.3
28.4	55.09	39.4	28.7	28.26	24.0	28.1	17.64	54.8	28.2	20.61	6.2
29.4	54.86	39.8	29.7	28.78	24.2	29.1	17.25	54.6	29.2	19.10	6.2
30.4	54.61	40.2	30.7	29.29	24.3	30.1	16.87	54.4	30.2	17.65	6.1
31.4	54.35	40.6	31.7	29.78	24.4	31.1	16.51	54.2	31.2	16.26	6.0
32.4	54.13	40.9	32.7	30.23	24.5	32.1	16.17	54.0	32.2	14.92	5.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Nov.	h m 1 21	+88 45	Nov.	h m 6 52	+87 12	Nov.	h m 18 5	+86 36	Nov.	h m 19 24	+88 59
	s	"		s	"		s	"		s	"
1.4	54.13	40.9	1.7	30.23	24.5	1.1	16.17	54.0	1.2	74.92	5.9
2.4	53.93	41.2	2.7	30.69	24.6	2.1	15.83	53.8	2.2	73.63	5.9
3.4	53.76	41.6	3.7	31.15	24.7	3.1	15.48	53.6	3.2	72.36	5.8
4.4	53.65	41.9	4.7	31.62	24.8	4.1	15.13	53.5	4.2	71.06	5.7
5.4	53.54	42.3	5.7	32.13	24.9	5.1	14.79	53.3	5.2	69.72	5.7
6.4	53.40	42.6	6.6	32.64	25.0	6.1	14.42	53.1	6.2	68.34	5.7
7.4	53.25	43.0	7.6	33.17	25.1	7.1	14.04	53.0	7.2	66.92	5.6
8.4	53.03	43.4	8.6	33.71	25.2	8.1	13.67	52.8	8.2	65.46	5.6
9.4	52.74	43.8	9.6	34.24	25.3	9.1	13.30	52.5	9.2	63.98	5.5
10.4	52.40	44.2	10.6	34.76	25.5	10.1	12.93	52.3	10.2	62.52	5.4
11.4	51.97	44.6	11.6	35.26	25.7	11.1	12.59	52.0	11.2	61.09	5.2
12.4	51.50	44.9	12.6	35.71	25.9	12.1	12.26	51.8	12.2	59.72	5.1
13.4	51.02	45.2	13.6	36.15	26.1	13.1	11.96	51.5	13.2	58.41	4.9
14.4	50.55	45.6	14.6	36.56	26.3	14.1	11.69	51.2	14.2	57.18	4.8
15.4	50.09	45.9	15.6	36.95	26.5	15.1	11.42	51.0	15.2	56.01	4.6
16.4	49.68	46.2	16.6	37.33	26.6	16.1	11.16	50.7	16.2	54.87	4.5
17.4	49.31	46.5	17.6	37.72	26.8	17.1	10.90	50.5	17.2	53.74	4.4
18.4	48.96	46.8	18.6	38.14	26.9	18.1	10.63	50.3	18.2	52.59	4.2
19.4	48.62	47.1	19.6	38.56	27.1	19.1	10.34	50.1	19.2	51.40	4.1
20.4	48.29	47.4	20.6	39.03	27.2	20.1	10.05	49.9	20.1	50.18	4.0
21.4	47.88	47.8	21.6	39.50	27.4	21.1	9.73	49.6	21.1	48.89	3.9
22.4	47.42	48.2	22.6	39.97	27.6	22.1	9.43	49.4	22.1	47.57	3.8
23.4	46.91	48.5	23.6	40.43	27.8	23.1	9.13	49.1	23.1	46.24	3.6
24.4	46.32	48.9	24.6	40.88	28.0	24.1	8.85	48.8	24.1	44.91	3.4
25.4	45.67	49.2	25.6	41.30	28.3	25.1	8.57	48.5	25.1	43.63	3.2
26.4	45.01	49.5	26.6	41.71	28.5	26.1	8.32	48.2	26.1	42.42	3.0
27.4	44.33	49.8	27.6	42.07	28.8	27.1	8.09	47.9	27.1	41.27	2.8
28.4	43.67	50.1	28.6	42.41	29.0	28.1	7.87	47.5	28.1	40.20	2.6
29.4	43.06	50.3	29.6	42.74	29.3	29.1	7.67	47.2	29.1	39.18	2.3
30.4	42.46	50.6	30.6	43.08	29.5	30.1	7.47	47.0	30.1	38.21	2.1
31.4	41.91	50.8	31.6	43.41	29.7	31.1	7.27	46.7	31.1	37.24	2.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (Polaris.)		Mean Solar Date.	γ Cephei (Hæv.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Dec.	^h ^m 1 21	[°] ['] +88 45	Dec.	^h ^m 6 52	[°] ['] +87 12	Dec.	^h ^m 18 5	[°] ['] +86 36	Dec.	^h ^m 19 24	[°] ['] +88 58
	^s	"		^s	"		^s	"		^s	"
1.4	41.91	50.8	1.6	43.41	29.7	1.1	7.27	46.7	1.1	37.24	62.0
2.4	41.39	51.1	2.6	43.76	29.9	2.1	7.05	46.4	2.1	36.24	61.8
3.3	40.86	51.4	3.6	44.13	30.1	3.1	6.82	46.2	3.1	35.20	61.6
4.3	40.32	51.7	4.6	44.50	30.3	4.0	6.59	45.9	4.1	34.14	61.4
5.3	39.72	52.0	5.6	44.89	30.5	5.0	6.37	45.6	5.1	33.03	61.2
6.3	39.07	52.3	6.6	45.28	30.8	6.0	6.15	45.3	6.1	31.91	61.0
7.3	38.34	52.5	7.6	45.65	31.2	7.0	5.93	45.0	7.1	30.78	60.8
8.3	37.55	52.8	8.6	46.00	31.5	8.0	5.73	44.6	8.1	29.71	60.6
9.3	36.70	53.1	9.6	46.30	31.8	9.0	5.56	44.3	9.1	28.69	60.3
10.3	35.85	53.3	10.6	46.59	32.1	10.0	5.42	43.9	10.1	27.75	60.0
11.3	34.97	53.5	11.6	46.84	32.4	11.0	5.29	43.6	11.1	26.89	59.7
12.3	34.13	53.7	12.6	47.06	32.6	12.0	5.17	43.2	12.1	26.11	59.4
13.3	33.33	53.9	13.6	47.27	32.8	13.0	5.09	42.9	13.1	25.37	59.2
14.3	32.59	54.1	14.5	47.49	33.1	14.0	4.99	42.6	14.1	24.69	58.9
15.3	31.86	54.3	15.5	47.72	33.4	15.0	4.89	42.3	15.1	23.98	58.7
16.3	31.17	54.5	16.5	47.95	33.6	16.0	4.78	42.0	16.1	23.27	58.4
17.3	30.47	54.7	17.5	48.22	33.9	17.0	4.66	41.7	17.1	22.51	58.2
18.3	29.74	54.9	18.5	48.50	34.2	18.0	4.54	41.4	18.1	21.72	58.0
19.3	28.98	55.1	19.5	48.78	34.4	19.0	4.40	41.1	19.1	20.86	57.7
20.3	28.14	55.4	20.5	49.05	34.7	20.0	4.27	40.8	20.1	20.03	57.5
21.3	27.26	55.6	21.5	49.31	35.0	21.0	4.16	40.4	21.1	19.17	57.2
22.3	26.32	55.8	22.5	49.55	35.3	22.0	4.06	40.1	22.1	18.38	56.9
23.3	25.34	56.0	23.5	49.76	35.6	22.9	3.97	39.7	23.1	17.65	56.6
24.3	24.34	56.2	24.5	49.94	35.9	23.9	3.91	39.3	24.1	16.98	56.2
25.3	23.36	56.3	25.5	50.09	36.3	24.9	3.87	38.9	25.1	16.40	55.9
26.3	22.42	56.4	26.5	50.19	36.6	25.9	3.84	38.6	26.0	15.88	55.6
27.3	21.51	56.5	27.5	50.31	37.0	26.9	3.83	38.3	27.0	15.41	55.3
28.3	20.66	56.6	28.5	50.44	37.3	27.9	3.82	38.0	28.0	14.97	55.0
29.3	19.85	56.8	29.5	50.56	37.5	28.9	3.80	37.7	29.0	14.54	54.7
30.3	19.04	56.9	30.5	50.71	37.8	29.9	3.78	37.4	30.0	14.09	54.5
31.3	18.23	57.0	31.5	50.86	38.0	30.9	3.73	37.1	31.0	13.60	54.2
32.3	17.42	57.2	32.5	51.03	38.3	31.9	3.70	36.8	32.0	13.07	53.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromedæ.		γ Pegasi. (Algenib.)		β Hydri.		ι Ceti.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension	Declination South.	Right Ascension.	Declination South.
	h m ° 3	° ' " +28 30	h m ° 7	° ' " +14 36	h m ° 20	° ' " -77 49	h m ° 24	° ' " - 4 31
Jan. 0.2	0.59 -13	69.7 -0.8	52.92 -11	26.0 -0.7	19.21 -92	100.7 +0.8	44.26 -10	54.2 -0.6
10.2	0.46 .12	68.8 1.0	52.81 .10	25.3 0.8	18.31 .87	99.6 1.4	44.16 .10	54.8 0.5
20.2	0.34 .12	67.7 1.2	52.71 .09	24.3 0.9	17.47 .80	97.9 2.0	44.06 .09	55.2 0.4
30.2	0.23 .10	66.3 1.4	52.62 .08	23.4 1.0	16.71 .71	95.6 2.5	43.97 .09	55.6 0.3
Feb. 9.1	0.14 .08	64.9 1.5	52.55 .06	22.4 1.0	16.05 .60	92.9 2.9	43.89 .07	55.8 -0.1
19.1	0.08 -0.5	63.3 -1.6	52.49 -0.4	21.4 -0.9	15.52 -47	89.8 +3.3	43.83 -0.5	55.8 +0.1
29.1	0.05 -0.2	61.7 1.5	52.47 -0.1	20.6 0.8	15.12 .33	86.4 3.6	43.79 -0.2	55.6 0.3
Mar. 10.0	0.05 +0.2	60.2 1.4	52.47 +0.2	19.8 0.6	14.86 .18	82.7 3.8	43.78 +0.1	55.3 0.5
20.0	0.09 .07	58.9 1.2	52.51 .06	19.3 0.4	14.75 -0.3	78.9 3.9	43.80 .04	54.7 0.7
30.0	0.18 .11	57.8 1.0	52.60 .10	18.9 -0.2	14.81 +.13	75.0 3.9	43.87 .08	53.8 1.0
Apr. 9.0	0.32 +1.6	56.9 -0.7	52.72 +.14	18.9 +0.1	15.01 +.29	71.1 +3.8	43.97 +.12	52.7 +1.2
18.9	0.50 .20	56.4 -0.3	52.88 .18	19.1 0.4	15.38 .44	67.3 3.7	44.11 .16	51.4 1.4
28.9	0.73 .24	56.3 +0.1	53.09 .22	19.7 0.7	15.90 .58	63.7 3.5	44.29 .20	49.9 1.6
May 8.9	0.99 .28	56.5 0.4	53.33 .26	20.6 1.0	16.55 .72	60.3 3.2	44.51 .24	48.2 1.8
18.8	1.29 .31	57.1 0.8	53.60 .29	21.7 1.3	17.33 .84	57.3 2.8	44.76 .27	46.3 1.9
28.8	1.62 +3.3	58.2 +1.2	53.90 +.31	23.2 +1.6	18.23 +.94	54.6 +2.4	45.04 +.29	44.3 +2.1
June 7.8	1.96 .35	59.5 1.5	54.22 .32	24.9 1.8	19.21 1.02	52.4 2.0	45.34 .31	42.2 2.1
17.8	2.32 .35	61.2 1.8	54.55 .33	26.8 2.0	20.26 1.07	50.7 1.4	45.66 .32	40.0 2.1
27.7	2.67 .35	63.2 2.1	54.88 .33	28.9 2.1	21.34 1.09	49.6 0.9	45.99 .32	37.9 2.1
July 7.7	3.01 .34	65.4 2.3	55.20 .32	31.1 2.2	22.44 1.09	48.9 +0.3	46.31 .31	35.9 2.0
17.7	3.34 +3.2	67.8 +2.4	55.51 +.30	33.3 +2.2	23.52 +1.05	48.9 -0.2	46.62 +.30	34.0 +1.8
27.7	3.64 .29	70.3 2.5	55.81 .27	35.5 2.2	24.55 .99	49.4 0.8	46.91 .28	32.2 1.6
Aug. 6.6	3.92 .25	72.9 2.6	56.07 .24	37.6 2.1	25.50 .89	50.5 1.4	47.18 .25	30.7 1.4
16.6	4.15 .22	75.4 2.9	56.29 .21	39.7 2.0	26.34 .77	52.1 1.8	47.42 .22	29.5 1.1
26.6	4.35 .18	78.0 2.5	56.49 .17	41.6 1.8	27.04 .62	54.2 2.3	47.62 .19	28.5 0.8
Sept. 5.5	4.51 +1.4	80.4 +2.4	56.64 +.13	43.4 +1.6	27.58 +.45	56.7 -2.6	47.79 +.15	27.8 +0.6
15.5	4.63 .10	82.7 2.2	56.76 .10	44.9 1.4	27.94 .27	59.4 2.8	47.92 .11	27.4 0.3
25.5	4.70 .06	84.8 2.0	56.84 .06	46.2 1.2	28.12 +.08	62.4 3.0	48.02 .08	27.2 +0.1
Oct. 5.5	4.74 +0.2	86.7 1.8	56.88 +0.3	47.3 1.0	28.11 -11	65.4 3.0	48.08 .04	27.2 -0.2
15.4	4.74 -0.1	88.3 1.5	56.90 .00	48.2 0.8	27.91 .29	68.4 2.9	48.10 +0.1	27.5 0.4
25.4	4.72 -0.4	89.8 +1.3	56.88 -0.3	48.9 +0.5	27.53 -46	71.2 -2.7	48.10 -0.2	28.0 -0.5
Nov. 4.4	4.66 .07	90.9 1.0	56.84 .05	49.3 0.3	26.98 .61	73.7 2.3	48.07 .04	28.5 0.6
14.4	4.58 .09	91.7 0.7	56.77 .07	49.5 +0.1	26.30 .74	75.9 1.9	48.02 .06	29.2 0.7
24.3	4.49 .10	92.2 0.4	56.69 .09	49.5 -0.1	25.51 .84	77.6 1.4	47.95 .08	29.9 0.7
Dec. 4.3	4.37 .12	92.4 +0.1	56.60 .10	49.3 0.3	24.63 .90	78.7 0.8	47.86 .09	30.7 0.7
14.3	4.25 -1.3	92.3 -0.2	56.50 -1.1	48.9 -0.5	23.70 -93	79.2 -0.2	47.77 -1.0	31.4 -0.7
24.2	4.12 .13	91.9 0.6	56.39 .11	48.3 0.6	22.76 .94	79.1 +0.4	47.67 .10	32.1 0.7
34.2	3.99 -1.3	91.2 -0.9	56.28 -1.1	47.6 0.7	21.82 -92	78.4 +1.0	47.58 -1.0	32.8 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cassiopeiz.		β Ceti.		γ Cassiopeiz.		ϵ Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 0 34	° ' +55 57	h m 0 38	° ' -18 32	h m 0 38	° ' +74 25	h m 0 57	° ' + 7 19
	"	"	"	"	"	"	"	"
Jan. 0.3	35.99 -.27	80.9 0.0	22.79 -.11	91.0 -0.5	45.14 -.70	34.0 +0.2	33.20 -.11	54.5 -0.6
10.2	35.72 .27	80.5 -0.6	22.67 .11	91.4 -0.3	44.44 .69	34.0 -0.3	33.09 .11	53.9 0.6
20.2	35.45 .26	79.6 1.1	22.56 .11	91.6 0.0	43.76 .67	33.4 0.9	32.98 .11	53.2 0.7
30.2	35.19 .24	78.2 1.6	22.45 .10	91.5 +0.2	43.11 .62	32.2 1.4	32.87 .10	52.6 0.6
Feb. 9.1	34.96 .21	76.5 1.9	22.35 .09	91.2 0.5	42.51 .55	30.5 1.9	32.77 .09	51.9 0.6
19.1	34.76 -.17	74.4 -2.2	22.27 -.07	90.5 +0.8	42.00 -.45	28.3 -2.3	32.68 -.08	51.4 -0.5
29.1	34.62 .11	72.1 2.4	22.22 .04	89.6 1.0	41.61 .33	25.8 2.6	32.62 .05	51.0 0.4
Mar. 10.1	34.54 -.05	69.6 2.5	22.19 -.01	88.5 1.3	41.34 .20	23.0 2.8	32.58 -.02	50.7 -0.2
20.0	34.52 +0.2	67.1 2.4	22.20 +0.3	87.0 1.5	41.22 -.05	20.1 2.9	32.57 +0.1	50.6 0.0
30.0	34.57 .09	64.7 2.3	22.24 .06	85.4 1.8	41.25 +1.1	17.2 2.9	32.60 .05	50.7 +0.2
Apr. 9.0	34.70 +.17	62.5 -2.1	22.33 +.11	83.5 +2.0	41.44 +.26	14.4 -2.7	32.67 +.09	51.0 +0.5
19.0	34.90 .24	60.5 1.8	22.46 .15	81.4 2.1	41.77 .41	11.8 2.4	32.78 .13	51.6 0.7
28.9	35.18 .31	58.9 1.4	22.62 .19	79.2 2.3	42.25 .54	9.5 2.1	32.94 .18	52.4 1.0
May 8.9	35.52 .37	57.7 1.0	22.84 .23	76.9 2.4	42.86 .66	7.6 1.6	33.14 .22	53.5 1.2
18.9	35.91 .42	57.0 -0.5	23.08 .26	74.5 2.4	43.58 .76	6.2 1.2	33.37 .25	54.9 1.5
28.8	36.35 +.46	56.7 0.0	23.36 +.29	72.0 +2.4	44.38 +.83	5.3 -0.6	33.64 +.28	56.4 +1.7
June 7.8	36.82 .48	57.0 +0.5	23.66 .31	69.6 2.3	45.24 .88	4.9 -0.1	33.93 .30	58.2 1.8
17.8	37.32 .49	57.7 1.0	23.98 .33	67.3 2.2	46.15 .91	5.1 +0.5	34.25 .32	60.1 1.9
27.8	37.81 .49	59.0 1.5	24.31 .33	65.2 2.0	47.07 .92	5.8 1.0	34.57 .32	62.0 2.0
July 7.7	38.31 .48	60.6 1.9	24.64 .33	63.3 1.8	47.98 .90	7.1 1.5	34.89 .32	64.1 2.0
17.7	38.78 +.46	62.7 +2.2	24.97 +.32	61.6 +1.5	48.86 +.86	8.9 +2.0	35.21 +.31	66.1 +2.0
27.7	39.23 .43	65.1 2.6	25.27 .30	60.2 1.2	49.69 .79	11.1 2.4	35.52 .30	68.0 1.9
Aug. 6.7	39.64 .39	67.8 2.8	25.56 .27	59.2 0.9	50.45 .72	13.7 2.8	35.81 .28	69.9 1.8
16.6	40.01 .34	70.8 3.0	25.82 .24	58.5 0.5	51.13 .63	16.7 3.1	36.07 .25	71.6 1.6
26.6	40.32 .29	73.9 3.2	26.04 .21	58.2 +0.2	51.71 .53	19.9 3.4	36.30 .22	73.1 1.4
Sept. 5.6	40.58 +.23	77.2 +3.3	26.23 +.17	58.2 -0.2	52.19 +.43	23.4 +3.6	36.49 +.18	74.4 +1.2
15.5	40.78 .17	80.5 3.3	26.38 .13	58.5 0.5	52.56 .31	27.0 3.7	36.66 .15	75.5 1.0
25.5	40.93 .12	83.7 3.2	26.49 .09	59.2 0.8	52.82 .20	30.7 3.7	36.79 .11	76.4 0.7
Oct. 5.5	41.02 .06	86.9 3.1	26.56 .05	60.1 1.0	52.96 +0.8	34.5 3.7	36.88 .08	77.0 0.5
15.5	41.06 +0.1	90.0 2.9	26.59 +.02	61.2 1.2	52.98 -.04	38.1 3.6	36.95 .05	77.4 0.3
25.4	41.04 -.04	92.8 +2.7	26.59 -.01	62.4 -1.3	52.88 -.16	41.6 +3.4	36.98 +.02	77.6 +0.1
Nov. 4.4	40.97 .09	95.4 2.4	26.56 .04	63.7 1.3	52.66 .27	44.9 3.1	36.98 -.01	77.6 -0.1
14.4	40.85 .14	97.6 2.0	26.51 .06	65.0 1.3	52.34 .37	47.8 2.8	36.96 .03	77.5 0.2
24.3	40.69 .18	99.5 1.6	26.43 .08	66.3 1.2	51.92 .47	50.4 2.3	36.92 .05	77.2 0.3
Dec. 4.3	40.50 .21	100.9 1.2	26.34 .10	67.4 1.1	51.41 .55	52.5 1.8	36.85 .07	76.8 0.4
14.3	40.27 -.24	101.8 +0.7	26.24 -.11	68.4 -0.9	50.82 -.61	54.0 +1.3	36.77 -.08	76.3 -0.5
24.3	40.01 .26	102.3 +0.2	26.12 .12	69.2 0.7	50.18 .66	55.0 0.7	36.68 .10	75.8 0.6
34.2	39.75 -.27	102.2 -0.3	26.01 -.12	69.8 -0.5	49.50 -.69	55.4 +0.1	36.58 -.11	75.1 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.			θ^1 Ceti.			38 Cassiopeiæ.			γ Piscium.		
	Right Ascension.		Declination North.	Right Ascension.		Declination South.	Right Ascension.		Declination North.	Right Ascension.		Declination North.
	h	m	° ' "	h	m	° ' "	h	m	° ' "	h	m	° ' "
	I	3	+35 4	I	18	- 8 42	I	23	+69 43	I	25	+14 48
Jan. 0.3	54.81	-14	24.1 -0.3	50.23	-11	71.3 -0.7	29.31	-48	69.0 +0.7	55.67	-10	44.0 -0.6
10.2	54.67	.15	23.7 0.6	50.12	.11	71.9 0.6	28.82	.50	69.5 +0.2	55.56	.11	43.5 0.6
20.2	54.51	.15	22.9 0.9	50.00	.12	72.5 0.4	28.32	.51	69.4 -0.4	55.44	.12	42.8 0.7
30.2	54.36	.15	21.9 1.1	49.88	.11	72.8 -0.2	27.81	.50	68.7 0.9	55.32	.12	42.1 0.7
Feb. 9.2	54.21	.13	20.7 1.3	49.77	.11	72.9 0.0	27.32	.46	67.5 1.4	55.20	.11	41.4 0.7
19.1	54.09	-11	19.3 -1.5	49.67	-09	72.8 +0.2	26.88	-41	65.8 -1.9	55.09	-10	40.6 -0.7
29.1	53.98	.08	17.7 1.6	49.58	.07	72.5 0.4	26.50	.33	63.7 2.3	55.00	.08	39.9 0.7
Mar. 10.1	53.92	-05	16.1 1.6	49.52	.05	71.9 0.7	26.21	.24	61.3 2.5	54.93	.05	39.3 0.6
20.1	53.89	.00	14.5 1.5	49.49	-01	71.2 0.9	26.02	.13	58.7 2.7	54.90	-02	38.8 0.4
30.0	53.92	+05	13.0 1.4	49.50	+02	70.2 1.1	25.95	-02	55.9 2.7	54.90	+02	38.4 -0.2
Apr. 9.0	53.99	+10	11.7 -1.2	49.54	+06	68.9 +1.4	25.99	+11	53.2 -2.7	54.94	+07	38.3 0.0
19.0	54.11	.15	10.6 0.9	49.63	.11	67.4 1.6	26.16	.22	50.5 2.5	55.03	.11	38.4 +0.2
28.9	54.29	.20	9.9 0.6	49.76	.15	65.7 1.8	26.44	.34	48.2 2.2	55.17	.16	38.7 0.5
May 8.9	54.52	.25	9.5 -0.2	49.93	.20	63.8 2.0	26.84	.45	46.1 1.9	55.35	.20	39.3 0.7
18.9	54.79	.29	9.4 +0.1	50.14	.23	61.7 2.1	27.34	.54	44.4 1.5	55.57	.24	40.2 1.0
28.9	55.10	+33	9.8 +0.5	50.39	+26	59.6 +2.2	27.93	+62	43.1 -1.0	55.82	+27	41.3 +1.3
June 7.8	55.44	.35	10.5 0.9	50.66	.29	57.4 2.2	28.58	.68	42.4 -0.5	56.11	.30	42.7 1.5
17.8	55.81	.37	11.6 1.2	50.96	.31	55.2 2.2	29.29	.72	42.1 0.0	56.42	.32	44.3 1.7
27.8	56.18	.37	13.0 1.6	51.27	.32	53.0 2.1	30.03	.75	42.3 +0.5	56.74	.33	46.0 1.8
July 7.8	56.56	.37	14.7 1.8	51.59	.32	50.9 2.0	30.78	.75	43.1 1.0	57.08	.33	47.9 1.9
17.7	56.93	+36	16.7 +2.1	51.91	+31	49.0 +1.8	31.53	+74	44.3 +1.5	57.40	+32	49.8 +1.9
27.7	57.28	.34	18.8 2.2	52.22	.30	47.3 1.6	32.26	.71	46.0 1.9	57.72	.31	51.7 1.9
Aug. 6.7	57.61	.32	21.1 2.4	52.52	.28	45.9 1.3	32.95	.67	48.2 2.3	58.03	.29	53.7 1.9
16.6	57.92	.29	23.6 2.4	52.79	.26	44.7 1.0	33.59	.61	50.7 2.6	58.31	.27	55.5 1.8
26.6	58.19	.25	26.0 2.4	53.04	.23	43.9 0.7	34.17	.55	53.5 2.9	58.57	.24	57.3 1.7
Sept. 5.6	58.42	+21	28.5 +2.4	53.25	+20	43.4 +0.4	34.68	+47	56.5 +3.2	58.80	+21	58.8 +1.5
15.6	58.62	.18	30.9 2.4	53.43	.16	43.2 +0.1	35.12	.39	59.8 3.4	58.99	.18	60.3 1.3
25.5	58.78	.14	33.2 2.3	53.58	.13	43.2 -0.1	35.47	.31	63.3 3.5	59.15	.14	61.5 1.1
Oct. 5.5	58.89	.10	35.4 2.1	53.69	.09	43.6 0.4	35.73	.22	66.7 3.5	59.28	.11	62.5 0.9
15.5	58.97	.06	37.5 1.9	53.77	.06	44.2 0.7	35.91	.13	70.2 3.4	59.37	.08	63.3 0.7
25.5	59.02	+03	39.3 +1.7	53.81	+03	45.0 -0.9	35.99	+04	73.6 +3.3	59.44	+05	64.0 +0.5
Nov. 4.4	59.02	-01	40.9 1.5	53.83	.00	45.9 1.0	35.98	-05	76.9 3.1	59.47	+02	64.4 0.3
14.4	59.00	.04	42.3 1.2	53.82	-02	46.9 1.0	35.88	.14	79.9 2.9	59.48	-01	64.7 +0.2
24.4	58.95	.07	43.3 0.9	53.79	.05	48.0 1.1	35.69	.23	82.6 2.5	59.46	.03	64.8 0.0
Dec. 4.3	58.87	.09	44.1 0.6	53.73	.07	49.0 1.0	35.43	.31	85.0 2.1	59.41	.06	64.7 -0.1
14.3	58.76	-11	44.6 +0.3	53.65	-08	50.0 -0.9	35.08	-38	86.9 +1.6	59.35	-08	64.5 -0.3
24.3	58.64	.13	44.7 0.0	53.56	.10	50.9 0.8	34.67	.43	88.3 1.1	59.26	.09	64.1 0.4
34.3	58.49	-14	44.5 -0.4	53.45	-11	51.7 -0.7	34.21	-48	89.1 +0.5	59.16	-10	63.6 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Eridani. (Achernar.)		\circ Piscium.		β Arietis.		γ Cassiopeiz.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 1 33	° ' -57 45	h m 1 39	° ' + 8 38	h m 1 48	° ' +20 18	h m 1 54	° ' +71 55
	h m 1 33	° ' "	h m 1 39	° ' "	h m 1 48	° ' "	h m 1 54	° ' "
Jan. 0.3	51.79 -32	66.4 -0.6	54.82 -10	10.0 -0.6	54.36 -10	10.0 -0.3	33.70 -30	28.8 +1.3
10.3	51.47 .33	66.8 -0.1	54.72 .11	9.4 0.6	54.25 .11	9.6 0.3	33.18 .54	29.8 0.7
20.2	51.14 .33	66.6 +0.5	54.60 .12	8.8 0.6	54.12 .13	9.0 0.6	32.62 .57	30.2 +0.1
30.2	50.82 .32	65.8 1.0	54.48 .12	8.2 0.6	53.99 .13	8.4 0.7	32.04 .58	29.9 -0.5
Feb. 9.2	50.51 .30	64.5 1.5	54.36 .12	7.6 0.6	53.86 .13	7.6 0.8	31.46 .56	29.1 1.1
19.2	50.22 -27	62.7 +2.0	54.25 -11	7.1 -0.5	53.74 -12	6.8 -0.8	30.92 -31	27.8 -1.6
29.1	49.97 .23	60.4 2.5	54.15 .09	6.7 0.4	53.62 .10	6.0 0.9	30.43 .44	26.0 2.0
Mar. 10.1	49.76 .18	57.8 2.8	54.08 .06	6.3 0.3	53.53 .07	5.1 0.8	30.03 .35	23.8 2.3
20.1	49.61 .13	54.8 3.1	54.03 -0.3	6.2 -0.1	53.48 -0.4	4.4 0.7	29.73 .24	21.3 2.6
30.0	49.51 -06	51.5 3.4	54.02 +0.1	6.2 +0.1	53.46 .00	3.7 0.6	29.55 -11	18.6 2.7
Apr. 9.0	49.48 .00	48.1 +3.5	54.05 +0.5	6.4 +0.3	53.48 +0.5	3.2 -0.4	29.50 +0.2	15.9 -2.7
19.0	49.51 +07	44.5 3.6	54.12 .09	6.8 0.6	53.55 .09	2.9 -0.2	29.59 .16	13.2 2.6
29.0	49.62 .14	40.8 3.6	54.24 .14	7.5 0.8	53.66 .14	2.9 +0.1	29.81 .29	10.6 2.5
May 8.9	49.80 .21	37.2 3.6	54.40 .18	8.4 1.0	53.82 .19	3.1 0.4	30.17 .41	8.3 2.2
18.9	50.04 .28	33.7 3.4	54.60 .22	9.6 1.3	54.03 .23	3.6 0.7	30.64 .53	6.2 1.8
28.9	50.35 +33	30.4 +3.2	54.84 +26	10.9 +1.5	54.28 +27	4.4 +0.9	31.23 +63	4.6 -1.4
June 7.9	50.71 .39	27.3 2.9	55.12 .29	12.5 1.6	54.56 .29	5.4 1.1	31.90 .71	3.4 1.0
17.8	51.12 .43	24.6 2.5	55.41 .30	14.2 1.8	54.87 .32	6.6 1.4	32.65 .77	2.7 -0.5
27.8	51.56 .46	22.3 2.1	55.72 .31	16.0 1.8	55.20 .33	8.1 1.6	33.44 .81	2.5 0.0
July 7.8	52.03 .48	20.4 1.6	56.05 .32	17.9 1.9	55.53 .34	9.8 1.7	34.27 .83	2.7 +0.5
17.7	52.51 +48	19.0 +1.1	56.37 +32	19.8 +1.9	55.87 +34	11.5 +1.8	35.11 +83	3.5 +1.0
27.7	52.99 .47	18.2 +0.5	56.69 .31	21.7 1.8	56.21 .33	13.4 1.9	35.94 .82	4.8 1.5
Aug. 6.7	53.46 .45	18.0 0.0	56.99 .29	23.5 1.7	56.53 .31	15.2 1.9	36.75 .79	6.4 1.9
16.7	53.89 .42	18.3 -0.6	57.28 .27	25.1 1.6	56.83 .29	17.1 1.8	37.51 .74	8.5 2.3
26.6	54.29 .37	19.2 1.2	57.54 .25	26.6 1.4	57.11 .27	18.9 1.8	38.22 .68	11.0 2.6
Sept. 5.6	54.63 +32	20.6 -1.7	57.77 +22	27.9 +1.2	57.36 +24	20.6 +1.7	38.87 +61	13.8 +2.9
15.6	54.92 .26	22.5 2.1	57.97 .19	29.0 1.0	57.58 .20	22.2 1.5	39.44 .53	16.8 3.1
25.6	55.15 .19	24.8 2.4	58.14 .15	29.9 0.8	57.77 .17	23.6 1.3	39.92 .44	20.1 3.3
Oct. 5.5	55.30 .12	27.4 2.7	58.28 .12	30.6 0.5	57.92 .14	24.9 1.2	40.32 .35	23.4 3.4
15.5	55.39 +05	30.2 2.9	58.39 .09	31.0 0.3	58.04 .11	26.0 1.0	40.61 .25	26.8 3.4
25.5	55.40 -02	33.1 -2.9	58.46 +06	31.2 +0.1	58.14 +08	27.0 +0.8	40.81 +14	30.3 +3.4
Nov. 4.5	55.35 .08	36.0 2.8	58.51 .03	31.3 0.0	58.20 .05	27.7 0.7	40.90 +04	33.6 3.3
14.4	55.23 .14	38.8 2.6	58.53 +01	31.2 -0.2	58.23 +02	28.3 0.5	40.88 -07	36.8 3.1
24.4	55.06 .20	41.3 2.3	58.52 -02	30.9 0.3	58.23 -01	28.7 0.3	40.76 .18	39.8 2.8
Dec. 4.4	54.83 .24	43.5 2.0	58.49 .04	30.5 0.4	58.20 .04	28.9 +0.1	40.53 .27	42.4 2.5
14.3	54.57 -28	45.2 -1.5	58.43 -07	30.1 -0.5	58.15 -06	28.9 -0.1	40.21 -36	44.7 +2.0
24.3	54.27 .31	46.5 1.0	58.36 .09	29.6 0.6	58.07 .09	28.8 0.3	39.80 .45	46.5 1.5
34.3	53.95 -32	47.2 -0.5	58.26 -10	29.0 -0.6	57.97 -11	28.5 -0.4	39.32 -53	47.8 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Arietis.		ξ^1 Ceti.		ι Cassiopeiæ.		ξ^2 Ceti.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 2 1	° ' +22 58	h m 2 7	° ' +8 21	h m 2 20	° ' +66 56	h m 2 22	° ' +7 59
	s	"	s	"	s	"	s	"
Jan. 0.3	19.39 -10	26.6 -0.1	30.15 -09	39.3 -0.5	30.55 -33	27.9 +1.3	38.74 -08	45.5 -0.6
10.3	19.29 .12	26.3 0.3	30.05 .10	38.7 0.5	30.19 .38	29.0 0.8	38.65 .10	45.0 0.6
20.3	19.16 .13	25.8 0.5	29.94 .12	38.2 0.5	29.78 .42	29.6 +0.3	38.54 .12	44.4 0.6
30.2	19.03 .14	25.2 0.6	29.82 .13	37.6 0.5	29.35 .44	29.6 -0.3	38.42 .13	43.8 0.5
Feb. 9.2	18.89 .14	24.5 0.8	29.69 .13	37.1 0.5	28.90 .44	29.1 0.8	38.29 .13	43.3 0.5
19.2	18.75 -13	23.7 -0.8	29.56 -12	36.6 -0.4	28.46 -42	28.1 -1.3	38.16 -13	42.9 -0.4
29.2	18.63 .11	22.8 0.9	29.44 .11	36.2 0.3	28.06 .37	26.5 1.7	38.04 .12	42.5 0.3
Mar. 10.1	18.53 .09	21.9 0.9	29.35 .08	35.9 0.2	27.72 .31	24.6 2.0	37.93 .10	42.2 0.2
20.1	18.45 .06	21.0 0.8	29.27 .05	35.8 -0.1	27.44 .23	22.4 2.3	37.84 .07	42.1 -0.1
30.1	18.42 -02	20.2 0.7	29.24 -02	35.8 +0.1	27.26 .13	20.0 2.5	37.79 -03	42.1 +0.1
Apr. 9.0	18.43 +03	19.6 -0.5	29.24 +02	36.0 +0.3	27.18 -03	17.4 -2.6	37.78 +01	42.3 +0.3
19.0	18.49 .08	19.1 0.3	29.29 .07	36.4 0.5	27.20 +08	14.9 2.5	37.81 .05	42.7 0.5
29.0	18.59 .13	18.9 -0.1	29.38 .11	37.0 0.8	27.34 .19	12.4 2.4	37.89 .10	43.3 0.7
May 9.0	18.75 .18	18.9 +0.2	29.51 .16	37.9 1.0	27.58 .29	10.1 2.1	38.01 .14	44.2 0.9
18.9	18.95 .22	19.2 0.4	29.69 .20	39.0 1.2	27.92 .39	8.1 1.8	38.17 .19	45.3 1.1
28.9	19.19 +26	19.8 +0.7	29.91 +24	40.3 +1.4	28.36 +48	6.4 -1.5	38.38 +23	46.5 +1.3
June 7.9	19.47 .29	20.6 1.0	30.17 .27	41.7 1.6	28.88 .55	5.1 1.1	38.62 .26	48.0 1.5
17.8	19.78 .32	21.7 1.2	30.45 .29	43.4 1.7	29.46 .61	4.3 0.6	38.90 .28	49.6 1.6
27.8	20.10 .33	23.0 1.4	30.75 .31	45.1 1.8	30.10 .65	3.9 -0.2	39.19 .30	51.3 1.7
July 7.8	20.44 .34	24.5 1.6	31.07 .32	46.9 1.8	30.76 .68	4.0 +0.3	39.50 .32	53.0 1.8
17.8	20.79 +34	26.1 +1.7	31.39 +32	48.7 +1.8	31.45 +69	4.5 +0.7	39.82 +32	54.8 +1.7
27.7	21.13 .34	27.9 1.8	31.71 .31	50.5 1.7	32.14 .68	5.5 1.2	40.14 .32	56.5 1.7
Aug. 6.7	21.46 .32	29.7 1.9	32.02 .30	52.2 1.6	32.82 .67	6.8 1.6	40.45 .31	58.2 1.6
16.7	21.77 .30	31.6 1.9	32.31 .28	53.8 1.5	33.48 .64	8.6 2.0	40.76 .29	59.7 1.4
26.7	22.06 .28	33.4 1.8	32.59 .26	55.2 1.3	34.10 .60	10.8 2.3	41.04 .27	61.1 1.3
Sept. 5.6	22.32 +25	35.1 +1.7	32.84 +24	56.4 +1.1	34.67 +55	13.2 +2.6	41.30 +25	62.2 +1.1
15.6	22.56 .22	36.8 1.6	33.06 .21	57.4 0.9	35.19 .49	15.9 2.8	41.53 .22	63.2 0.8
25.6	22.76 .19	38.3 1.5	33.26 .18	58.2 0.7	35.65 .42	18.8 3.0	41.74 .19	63.9 0.6
Oct. 5.5	22.93 .16	39.7 1.3	33.42 .15	58.8 0.5	36.04 .35	21.9 3.1	41.92 .16	64.4 0.4
15.5	23.07 .13	40.9 1.2	33.55 .12	59.2 0.3	36.36 .28	25.1 3.2	42.07 .14	64.7 0.2
25.5	23.18 +10	42.0 +1.0	33.66 +09	59.3 +0.1	36.60 +20	28.3 +3.2	42.19 +11	64.8 +0.1
Nov. 4.5	23.26 .06	42.9 0.9	33.73 .06	59.3 -0.1	36.76 .12	31.4 3.1	42.28 .07	64.8 0.1
14.4	23.30 +03	43.6 0.7	33.78 +03	59.1 0.2	36.83 +03	34.4 2.9	42.34 .04	64.6 0.3
24.4	23.31 .00	44.1 0.5	33.80 .00	58.8 0.3	36.82 .05	37.3 2.7	42.37 +02	64.2 0.4
Dec. 4.4	23.30 -03	44.5 0.3	33.79 -02	58.4 0.4	36.73 .14	39.9 2.4	42.37 .01	63.8 0.5
14.4	23.26 -06	44.6 +0.1	33.75 -05	58.0 -0.5	36.55 -22	42.1 +2.1	42.35 -04	63.3 0.5
24.3	23.18 .08	44.6 -0.1	33.69 .07	57.4 0.5	36.29 .29	44.0 1.6	42.29 .07	62.7 0.6
34.3	23.09 -10	44.4 -0.3	33.60 -09	56.9 -0.5	35.97 .35	45.4 +1.2	42.21 .09	62.1 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.		α Ceti.		48 Cephei (H.)		ζ Arietis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 2 37	° ' " +2 47	h m 2 56	° ' " +3 40	h m 3 7	° ' " +77 21	h m 3 8	° ' " +20 39
Jan. 0.3	55.76 -.08	57.2 -.08	51.73 -.07	60.8 -.08	10.45 -.54	31.4 +2.1	56.61 -.06	43.9 -.01
10.3	55.67 .10	56.5 .07	51.65 .09	60.1 .07	9.84 .67	33.3 1.6	56.53 .09	43.8 .02
20.3	55.56 .12	55.9 .06	51.55 .11	59.5 .06	9.11 .77	34.7 1.1	56.43 .12	43.6 .03
30.3	55.44 .13	55.3 .05	51.42 .13	58.9 .05	8.30 .84	35.5 +0.5	56.30 .14	43.2 .04
Feb. 9.2	55.30 .14	54.8 .04	51.29 .14	58.5 .04	7.44 .87	35.7 -.01	56.15 .15	42.8 .05
19.2	55.16 -.13	54.5 -.03	51.14 -.14	58.1 -.03	6.57 -.86	35.4 -.06	56.00 -.15	42.3 -.05
29.2	55.03 .12	54.3 -.01	51.00 .13	57.8 -.02	5.73 .81	34.4 1.2	55.85 .15	41.7 .06
Mar. 10.2	54.92 .10	54.2 0.0	50.88 .12	57.7 0.0	4.95 .72	33.0 1.7	55.71 .13	41.1 .06
20.1	54.82 .08	54.3 +0.2	50.77 .09	57.8 +0.1	4.28 .60	31.1 2.1	55.59 .11	40.5 .06
30.1	54.76 .05	54.6 .04	50.69 .06	58.0 .03	3.75 .45	28.8 2.4	55.49 .07	40.0 .05
Apr. 9.1	54.73 -.01	55.1 +0.6	50.64 -.02	58.4 +0.5	3.37 -.28	26.2 -2.6	55.44 -.03	39.5 -.04
19.0	54.74 +0.4	55.8 .08	50.64 +0.2	59.0 .07	3.18 -.10	23.5 2.8	55.43 +0.1	39.1 .03
29.0	54.80 .08	56.6 1.0	50.68 .06	59.8 .09	3.17+ .09	20.6 2.8	55.46 .06	38.9 -.01
May 9.0	54.90 .12	57.7 1.2	50.77 .11	60.9 1.1	3.36 .28	17.9 2.7	55.55 .11	38.9 +0.1
19.0	55.05 .17	59.1 1.4	50.90 .15	62.1 1.3	3.73 .46	15.3 2.5	55.68 .16	39.1 .03
June 28.9	55.24 +2.1	60.5 +1.6	51.07 +1.9	63.5 +1.5	4.28+ .63	12.9 -2.2	55.86 +2.0	39.5 +0.5
7.9	55.46 .24	62.2 1.7	51.28 .23	65.0 1.6	4.99 .78	10.8 1.9	56.08 .24	40.1 .07
17.9	55.72 .27	64.0 1.8	51.53 .26	66.6 1.7	5.84 .91	9.0 1.5	56.34 .27	40.9 .09
27.9	56.01 .29	65.8 1.8	51.80 .28	68.4 1.8	6.81 1.01	7.7 1.1	56.63 .30	41.8 1.1
July 7.8	56.31 .31	67.6 1.8	52.10 .30	70.1 1.8	7.87 1.09	6.9 0.6	56.94 .32	43.0 1.2
17.8	56.62 +3.1	69.4 +1.8	52.41 +3.1	71.9 +1.7	9.00+1.15	6.5 -.02	57.27 +3.3	44.2 +1.3
27.8	56.94 .31	71.1 1.7	52.72 .31	73.5 1.6	10.16 1.18	6.5 +0.3	57.60 .33	45.6 1.4
Aug. 6.7	57.25 .30	72.7 1.5	53.03 .31	75.1 1.5	11.35 1.18	7.1 0.8	57.93 .33	47.0 1.4
16.7	57.55 .29	74.1 1.3	53.34 .30	76.5 1.3	12.53 1.17	8.1 1.2	58.26 .32	48.4 1.4
26.7	57.83 .28	75.3 1.1	53.63 .28	77.7 1.1	13.69 1.13	9.5 1.6	58.58 .31	49.8 1.3
Sept. 5.7	58.10 +2.5	76.3 +0.8	53.91 +2.7	78.7 +0.8	14.79+1.07	11.3 +2.0	58.88 +2.9	51.0 +1.2
15.6	58.34 .23	77.0 .06	54.16 .24	79.3 .06	15.83 1.00	13.5 2.4	59.16 .27	52.2 1.1
25.6	58.56 .20	77.5 .03	54.39 .22	79.8 .03	16.78 .90	16.1 2.7	59.42 .25	53.3 1.0
Oct. 5.6	58.75 .18	77.7 +0.1	54.60 .19	80.0 +0.1	17.63 .79	18.9 2.9	59.65 .22	54.3 .09
15.6	58.91 .15	77.6 -.01	54.78 .16	80.0 -.01	18.36 .67	22.0 3.1	59.86 .19	55.2 .08
25.5	59.04 +1.2	77.4 -.03	54.93 +1.1	79.8 -.03	18.96+ .53	25.2 +3.3	60.04 +1.6	55.9 +0.6
Nov. 4.5	59.14 .09	76.9 .05	55.05 .11	79.3 .05	19.42 .38	28.5 3.3	60.19 .13	56.4 .05
14.5	59.21 .06	76.4 .06	55.14 .08	78.8 .06	19.72 .21	31.8 3.3	60.30 .10	56.9 .04
24.4	59.26 +0.3	75.7 .07	55.20 .04	78.1 .07	19.85+ .05	35.1 3.2	60.39 .07	57.2 .03
Dec. 4.4	59.27 .00	74.9 .08	55.23 +0.1	77.3 .08	19.81- .12	38.3 3.0	60.44 +0.3	57.4 .02
14.4	59.25 -.03	74.2 -.08	55.23 -.02	76.6 -.08	19.60- .29	41.2 +2.7	60.45 .00	57.5 +0.1
24.4	59.20 .06	73.4 .08	55.20 .05	75.8 .08	19.23 .45	43.8 2.4	60.43 -.04	57.6 .00
34.3	59.13 .09	72.6 .07	55.13 -.08	75.0 -.07	18.71 .59	45.9 +2.1	60.37 -.07	57.5 -.01

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Persei.		ϵ Eridani.		δ Persei.		η Tauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 3 16	° ' " +49 29	h m 3 28	° ' " -9 48	h m 3 35	° ' " +47 27	h m 3 41	° ' " +23 47
Jan. 0.4	55.36 - .11	45.6 +1.2	3.21 - .06	32.7 -1.3	32.84 - .08	34.7 +1.2	19.50 - .04	12.4 +0.1
10.3	55.23 .15	46.6 0.8	3.13 .09	33.9 1.1	32.74 .12	35.8 0.9	19.45 .07	12.4 0.0
20.3	55.06 .19	47.3 0.5	3.03 .12	34.9 0.9	32.59 .17	36.5 0.6	19.36 .11	12.4 -0.1
30.3	54.85 .22	47.6 +0.1	2.90 .14	35.6 0.6	32.40 .20	36.9 +0.2	19.23 .13	12.2 0.2
Feb. 9.3	54.62 .24	47.5 -0.3	2.75 .15	36.2 0.4	32.18 .23	37.0 -0.1	19.09 .15	11.9 0.3
19.2	54.37 - .25	47.0 -0.7	2.60 - .16	36.4 -0.2	31.95 - .24	36.7 -0.5	18.93 - .16	11.6 -0.4
29.2	54.13 .24	46.2 1.0	2.44 .16	36.5 +0.1	31.71 .23	36.1 0.8	18.76 .16	11.1 0.4
Mar. 10.2	53.90 .21	45.1 1.3	2.28 .15	36.2 0.4	31.48 .21	35.1 1.1	18.60 .15	10.7 0.6
20.1	53.70 .18	43.7 1.5	2.15 .13	35.7 0.7	31.28 .18	33.9 1.3	18.46 .13	10.0 0.6
30.1	53.55 .13	42.1 1.7	2.03 .10	35.0 0.9	31.11 .14	32.5 1.5	18.34 .10	9.4 0.6
Apr. 9.1	53.45 - .07	40.3 -1.8	1.95 - .06	34.0 +1.1	31.00 - .09	30.9 -1.6	18.26 - .06	8.8 -0.5
19.1	53.41 .00	38.5 1.8	1.91 - .02	32.7 1.4	30.94 - .03	29.3 1.6	18.22 - .02	8.3 0.4
29.0	53.43 + .06	36.8 1.7	1.91 + .02	31.2 1.6	30.94 + .04	27.7 1.6	18.22 + .03	7.9 0.3
May 9.0	53.53 .13	35.1 1.6	1.95 .07	29.5 1.8	31.01 .10	26.1 1.5	18.28 .08	7.6 -0.2
19.0	53.70 .20	33.7 1.4	2.04 .11	27.7 1.9	31.15 .17	24.7 1.3	18.38 .13	7.5 0.0
29.0	53.93 + .26	32.4 -1.1	2.18 + .15	25.7 +2.1	31.35 + .23	23.4 -1.1	18.53 + .18	7.6 +0.2
June 7.9	54.21 .31	31.4 0.8	2.35 .19	23.5 2.2	31.61 .28	22.4 0.9	18.73 .22	7.9 0.4
17.9	54.55 .36	30.7 0.5	2.57 .23	21.3 2.2	31.92 .33	21.7 0.6	18.97 .26	8.4 0.6
27.9	54.94 .40	30.3 -0.2	2.81 .26	19.2 2.1	32.27 .37	21.2 -0.3	19.24 .29	9.0 0.7
July 7.8	55.35 .43	30.3 +0.1	3.08 .28	17.1 2.1	32.66 .40	21.1 0.0	19.54 .31	9.8 0.9
17.8	55.79 + .44	30.6 +0.5	3.37 + .29	15.1 +1.9	33.08 + .42	21.2 +0.3	19.86 + .33	10.8 +1.0
27.8	56.24 .45	31.2 0.8	3.67 .30	13.3 1.7	33.51 .44	21.7 0.6	20.20 .34	11.8 1.1
Aug. 6.8	56.70 .45	32.1 1.0	3.97 .30	11.7 1.4	33.95 .44	22.4 0.8	20.53 .34	12.9 1.1
16.7	57.15 .44	33.3 1.3	4.27 .30	10.4 1.1	34.39 .43	23.3 1.1	20.87 .33	14.1 1.2
26.7	57.59 .43	34.7 1.5	4.57 .29	9.4 0.8	34.82 .42	24.5 1.3	21.20 .32	15.2 1.1
Sept. 5.7	58.01 + .41	36.3 +1.7	4.85 + .28	8.8 +0.5	35.24 + .41	25.9 +1.5	21.52 + .31	16.4 +1.1
15.7	58.40 .38	38.2 1.9	5.12 .26	8.5 +0.1	35.63 .39	27.5 1.6	21.83 .30	17.5 1.0
25.6	58.77 .35	40.1 2.0	5.37 .24	8.6 -0.3	36.00 .36	29.2 1.8	22.11 .28	18.5 1.0
Oct. 5.6	59.10 .32	42.2 2.1	5.59 .21	9.0 0.6	36.35 .33	31.0 1.9	22.38 .25	19.4 0.9
15.6	59.40 .28	44.3 2.2	5.79 .19	9.8 0.9	36.66 .29	32.9 1.9	22.62 .23	20.2 0.8
25.5	59.66 + .24	46.5 +2.2	5.96 + .16	10.9 -1.2	36.93 + .25	34.8 +2.0	22.84 + .20	20.9 +0.7
Nov. 4.5	59.87 .19	48.6 2.1	6.11 .13	12.1 1.3	37.17 .21	36.8 1.9	23.03 .17	21.5 0.6
14.5	60.03 .14	50.8 2.1	6.22 .10	13.6 1.5	37.36 .17	38.7 1.9	23.18 .14	22.1 0.5
24.5	60.15 .09	52.8 2.0	6.30 .06	15.1 1.6	37.50 .11	40.6 1.8	23.30 .10	22.5 0.4
Dec. 4.4	60.21 + .03	54.7 1.8	6.34 + .03	16.7 1.6	37.59 .06	42.4 1.7	23.39 .06	22.9 0.3
14.4	60.22 - .02	56.4 +1.6	6.35 - .01	18.2 -1.5	37.62 + .01	44.0 +1.5	23.43 + .03	23.2 +0.2
24.4	60.17 .07	57.9 1.3	6.33 .04	19.6 1.4	37.61 - .04	45.5 1.3	23.44 .01	23.4 +0.1
34.4	60.07 - .11	59.1 +1.1	6.27 - .07	20.9 -1.2	37.53 - .10	46.7 +1.1	23.41 - .05	23.4 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 3 47	° ' " +31 34	h m 3 53	° ' " -13 47	h m 4 13	° ' " +15 22	h m 4 22	° ' " +18 57
Jan. 0.4	37.16 -.05	42.0 +0.5	12.19 -.05	72.7 -1.5	54.03 -.01	44.8 -0.3	34.20 .00	8.9 -0.1
10.4	37.10 .08	42.5 0.3	12.12 .08	74.1 1.3	54.00 .05	44.5 0.3	34.18 -.04	8.8 0.1
20.3	37.01 .11	42.7 +0.2	12.03 .11	75.4 1.1	53.94 .08	44.2 0.3	34.11 .08	8.7 0.2
30.3	36.88 .14	42.8 0.0	11.90 .14	76.3 0.8	53.83 .12	43.9 0.3	34.02 .11	8.5 0.2
Feb. 9.3	36.72 .17	42.7 -0.2	11.75 .15	77.0 0.5	53.71 .14	43.6 0.3	33.89 .14	8.3 0.2
19.3	36.54 -.18	42.4 -0.4	11.59 -.17	77.3 -0.2	53.55 -.15	43.3 -0.3	33.74 -.16	8.0 -0.3
29.2	36.36 .18	41.9 0.6	11.42 .17	77.4 +0.1	53.40 .16	43.0 0.3	33.57 .17	7.7 0.3
Mar. 10.2	36.19 .17	41.3 0.7	11.25 .16	77.2 0.4	53.23 .15	42.7 0.3	33.41 .16	7.4 0.3
20.2	36.03 .15	40.5 0.8	11.10 .14	76.7 0.7	53.08 .14	42.4 0.3	33.25 .15	7.1 0.3
30.1	35.89 .11	39.6 0.9	10.97 .12	75.9 0.9	52.95 .12	42.2 0.2	33.11 .12	6.8 0.3
Apr. 9.1	35.80 -.07	38.8 -0.9	10.86 -.09	74.8 +1.2	52.85 -.09	42.1 -0.1	33.00 -.09	6.5 -0.3
19.1	35.75 -.03	37.9 0.8	10.80 -.05	73.5 1.5	52.78 -.05	42.0 0.0	32.93 .05	6.2 0.2
29.1	35.74 +0.2	37.1 0.8	10.77 .00	71.9 1.7	52.75 .00	42.0 +0.1	32.89 -.01	6.1 -0.1
May 9.0	35.80 .08	36.3 0.6	10.79 +0.4	70.1 1.9	52.78 +0.4	42.2 0.2	32.91 +0.4	6.0 +0.1
19.0	35.90 .13	35.8 0.5	10.85 .09	68.1 2.1	52.84 .09	42.5 0.4	32.97 .08	6.2 0.2
29.0	36.06 +.18	35.4 -0.3	10.96 +.13	65.9 +2.2	52.96 +.13	43.0 +0.5	33.08 +.13	6.4 +0.3
June 8.0	36.26 .23	35.2 -0.1	11.11 .17	63.7 2.3	53.11 .18	43.6 0.7	33.23 .17	6.8 0.4
17.9	36.51 .27	35.2 +0.1	11.30 .21	61.4 2.3	53.31 .22	44.4 0.8	33.43 .21	7.3 0.6
27.9	36.80 .30	35.4 0.3	11.53 .24	59.1 2.3	53.55 .25	45.3 0.9	33.66 .25	8.0 0.7
July 7.9	37.11 .33	35.8 0.5	11.79 .27	56.9 2.2	53.81 .27	46.3 1.0	33.92 .28	8.7 0.8
17.8	37.45 +.34	36.4 +0.7	12.06 +.29	54.8 +2.0	54.10 +.29	47.3 +1.1	34.21 +.30	9.6 +0.9
27.8	37.80 .35	37.2 0.8	12.36 .30	52.9 1.8	54.40 .31	48.4 1.1	34.52 .31	10.5 0.9
Aug. 6.8	38.16 .36	38.1 1.0	12.66 .30	51.2 1.5	54.72 .32	49.5 1.1	34.83 .32	11.5 0.9
16.8	38.52 .36	39.1 1.1	12.96 .30	49.9 1.1	55.03 .32	50.5 1.0	35.16 .32	12.4 0.9
26.7	38.88 .35	40.2 1.1	13.27 .30	49.0 0.8	55.35 .32	51.5 0.9	35.48 .32	13.3 0.8
Sept. 5.7	39.22 +.34	41.4 +1.2	13.56 +.29	48.4 +0.4	55.67 +.31	52.3 +0.8	35.80 +.32	14.1 +0.8
15.7	39.55 .32	42.6 1.2	13.84 .27	48.2 0.0	55.97 .30	53.1 0.7	36.11 .31	14.8 0.7
25.7	39.86 .30	43.7 1.2	14.11 .25	48.4 -0.4	56.26 .28	53.7 0.5	36.41 .29	15.4 0.6
Oct. 5.6	40.15 .28	44.9 1.2	14.35 .23	49.0 0.8	56.53 .26	54.1 0.3	36.69 .28	15.9 0.4
15.6	40.42 .25	46.1 1.1	14.57 .21	50.0 1.1	56.79 .24	54.3 0.2	36.96 .26	16.3 0.3
25.6	40.65 +.22	47.2 +1.1	14.77 +.18	51.2 -1.4	57.02 +.22	54.5 +0.1	37.21 +.23	16.5 +0.2
Nov. 4.5	40.86 .19	48.2 1.0	14.93 .15	52.8 1.6	57.23 .19	54.4 -0.1	37.43 .21	16.7 +0.1
14.5	41.03 .16	49.2 0.9	15.07 .12	54.5 1.8	57.41 .16	54.3 0.2	37.62 .18	16.7 0.0
24.5	41.17 .12	50.1 0.9	15.17 .08	56.3 1.8	57.55 .13	54.1 0.2	37.78 .14	16.7 0.0
Dec. 4.5	41.26 .08	50.9 0.8	15.23 .05	58.2 1.9	57.66 .09	53.9 0.3	37.91 .10	16.7 -0.1
14.4	41.32 +.03	51.7 +0.7	15.27 +.01	60.0 -1.8	57.74 +.06	53.6 -0.3	37.99 +.07	16.6 -0.1
24.4	41.33 -.01	52.3 0.6	15.26 -.02	61.8 1.7	57.78 +.02	53.3 0.3	38.04 +.02	16.5 0.1
34.4	41.30 -.05	52.8 +0.5	15.22 -.06	63.3 -1.5	57.77 -.02	53.0 0.3	38.04 -.02	16.4 0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Tauri. (Aldebaran.)		α Camelopardalis.		δ Aurigæ.		ι Orionis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 4 29	° ' " +16 18	h m 4 43	° ' " +66 9	h m 4 50	° ' " +33 0	h m 4 58	° ' " +15 15
Jan. 0.4	58.77 +.01	10.1 -0.3	45.80 -0.05	72.8 +2.4	15.12 +.02	16.4 +0.7	39.26 +.03	41.6 -0.3
10.4	58.76 -0.03	9.8 0.3	45.70 .15	75.0 2.1	15.12 -0.03	17.1 0.6	39.27 -0.01	41.3 0.3
20.4	58.70 .07	9.5 0.3	45.51 .23	77.0 1.8	15.08 .07	17.6 0.5	39.23 .05	40.9 0.3
30.3	58.61 .11	9.2 0.3	45.22 .32	78.6 1.4	14.98 .12	18.0 0.3	39.16 .09	40.7 0.3
Feb. 9.3	58.49 .13	9.0 0.3	44.87 .38	79.7 0.9	14.84 .15	18.3 +0.2	39.05 .13	40.4 0.2
19.3	58.34 -0.15	8.7 -0.3	44.46 -0.43	80.4 +0.5	14.68 -0.17	18.4 0.0	38.91 -0.15	40.2 -0.2
29.2	58.18 .16	8.4 0.3	44.02 .45	80.7 0.0	14.50 .19	18.3 -0.1	38.75 .16	40.0 0.2
Mar. 10.2	58.01 .16	8.1 0.3	43.57 .44	80.4 -0.5	14.30 .19	18.1 0.3	38.58 .17	39.8 0.2
20.2	57.85 .15	7.9 0.2	43.13 .42	79.6 1.0	14.11 .18	17.7 0.5	38.41 .16	39.6 0.2
30.2	57.71 .13	7.7 0.2	42.74 .37	78.4 1.4	13.94 .16	17.1 0.6	38.26 .14	39.5 0.1
Apr. 9.1	57.60 -0.10	7.5 -0.1	42.40 -0.30	76.8 -1.7	13.80 -0.13	16.4 -0.7	38.13 -0.12	39.4 -0.1
19.1	57.52 .06	7.4 0.0	42.14 .22	75.0 2.0	13.69 .09	15.7 0.8	38.03 .08	39.3 0.0
29.1	57.48 -0.02	7.4 +0.1	41.96 .12	72.8 2.2	13.62 -0.04	14.9 0.8	37.97 -0.04	39.4 +0.1
May 9.1	57.49 +0.03	7.5 0.2	41.89 -0.02	70.5 2.3	13.61 +0.01	14.1 0.8	37.95 .00	39.5 0.2
19.0	57.54 .08	7.7 0.3	41.92 +0.08	68.2 2.3	13.65 .06	13.4 0.7	37.98 +0.05	39.8 0.3
29.0	57.64 +0.12	8.0 +0.4	42.05 +0.18	65.8 -2.3	13.74 +0.12	12.7 -0.6	38.05 +0.09	40.1 +0.4
June 8.0	57.78 .16	8.6 0.6	42.29 .28	63.6 2.2	13.88 .17	12.2 0.5	38.16 .14	40.6 0.5
17.9	57.97 .20	9.2 0.7	42.62 .37	61.5 2.0	14.07 .21	11.8 0.3	38.32 .18	41.2 0.6
27.9	58.19 .24	10.0 0.8	43.03 .46	59.6 1.8	14.31 .25	11.5 -0.2	38.52 .21	41.9 0.7
July 7.9	58.45 .27	10.8 0.9	43.53 .53	58.0 1.5	14.58 .29	11.4 0.0	38.75 .24	42.7 0.8
17.9	58.72 +0.29	11.8 +0.9	44.08 +0.58	56.7 -1.2	14.88 +0.31	11.5 +0.1	39.01 +0.27	43.5 +0.8
27.8	59.02 .29	12.7 0.9	44.70 .63	55.7 0.8	15.20 .33	11.6 0.2	39.28 .29	44.4 0.8
Aug. 6.8	59.33 .31	13.7 0.9	45.35 .66	55.1 0.5	15.55 .35	11.9 0.3	39.58 .30	45.2 0.8
16.8	59.65 .32	14.6 0.9	46.02 .68	54.8 -0.1	15.90 .36	12.3 0.4	39.89 .31	46.0 0.7
26.8	59.97 .32	15.5 0.8	46.71 .69	54.8 +0.2	16.26 .36	12.8 0.5	40.20 .31	46.7 0.6
Sept. 5.7	60.28 +0.31	16.2 +0.7	47.41 +0.69	55.3 +0.6	16.62 +0.36	13.4 +0.6	40.51 +0.31	47.3 +0.5
15.7	60.59 .30	16.9 0.6	48.10 .68	56.0 0.9	16.98 .35	14.0 0.6	40.83 .31	47.8 0.4
25.7	60.89 .29	17.4 0.4	48.77 .66	57.1 1.3	17.33 .34	14.6 0.7	41.13 .30	48.1 0.3
Oct. 5.6	61.17 .28	17.7 0.3	49.42 .63	58.5 1.6	17.66 .33	15.3 0.7	41.43 .29	48.3 +0.1
15.6	61.44 .26	17.9 0.2	50.03 .58	60.2 1.8	17.98 .31	16.0 0.7	41.71 .27	48.3 0.0
25.6	61.69 +0.24	18.0 +0.1	50.59 +0.53	62.2 +2.1	18.28 +0.29	16.7 +0.7	41.98 +0.26	48.2 -0.1
Nov. 4.6	61.91 .22	18.0 0.0	51.10 .47	64.4 2.3	18.56 .26	17.4 0.7	42.22 .23	48.0 0.3
14.5	62.11 .19	17.9 -0.2	51.53 .39	66.8 2.4	18.81 .23	18.1 0.7	42.44 .21	47.7 0.3
24.5	62.27 .15	17.7 0.3	51.89 .31	69.3 2.5	19.02 .19	18.9 0.7	42.64 .18	47.3 0.4
Dec. 4.5	62.40 .11	17.4 0.3	52.15 .22	71.8 2.6	19.19 .15	19.6 0.7	42.79 .14	46.9 0.4
14.5	62.49 +0.08	17.2 -0.3	52.32 +0.12	74.4 +2.5	19.32 +0.10	20.3 +0.7	42.91 +0.10	46.5 -0.4
24.4	62.54 +0.04	16.9 0.3	52.39 +0.02	76.9 2.4	19.40 .05	21.0 0.7	42.99 .06	46.1 0.4
34.4	62.55 -0.01	16.6 -0.3	52.35 -0.09	79.3 +2.2	19.43 +0.01	21.7 +0.6	43.03 +0.01	45.7 -0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>α</i> Aurigæ. (<i>Capella</i> .)		<i>β</i> Orionis. (<i>Rigel</i> .)		<i>β</i> Tauri.		Groombridge 966.	
	Right Ascension.	Declination <i>North</i> .	Right Ascension.	Declination <i>South</i> .	Right Ascension.	Declination <i>North</i> .	Right Ascension.	Declination <i>North</i> .
	<i>h m</i> 5 9	<i>° '</i> +45 53	<i>h m</i> 5 9	<i>° '</i> — 8 18	<i>h m</i> 5 19	<i>° '</i> +28 31	<i>h m</i> 5 25	<i>° '</i> +74 58
	<i>s</i>	<i>"</i>	<i>s</i>	<i>"</i>	<i>s</i>	<i>"</i>	<i>s</i>	<i>"</i>
Jan. 0.4	2.66 +.04	43.6 +1.4	34.07 +.02	73.4 -1.7	44.98 +.06	19.8 +0.4	55.42+ .04	41.8 +2.8
10.4	2.67 - .02	44.9 1.3	34.07 - .02	75.0 1.5	45.02 +.01	20.2 0.4	55.35- .14	44.6 2.6
20.4	2.62 .08	46.1 1.1	34.03 .06	76.4 1.3	44.99 - .04	20.6 0.3	55.13 .30	47.1 2.4
30.4	2.52 .13	47.2 0.9	33.95 .10	77.6 1.1	44.93 .09	20.9 0.3	54.75 .44	49.3 2.0
Feb. 9.3	2.36 .18	48.0 0.7	33.83 .13	78.5 0.8	44.82 .13	21.1 0.2	54.25 .56	51.1 1.6
19.3	2.16 - .21	48.4 +0.4	33.69 - .15	79.2 -0.6	44.67 - .16	21.3 +0.1	53.63- .65	52.5 +1.1
29.3	1.93 .23	48.7 +0.1	33.52 .17	79.7 0.3	44.50 .17	21.3 0.0	52.94 .71	53.3 +0.6
Mar. 10.2	1.69 .24	48.6 -0.2	33.35 .17	79.9 -0.1	44.32 .18	21.2 -0.1	52.22 .73	53.6 0.0
20.2	1.46 .23	48.2 0.5	33.18 .17	79.8 +0.2	44.14 .18	21.0 0.3	51.48 .72	53.4 -0.5
30.2	1.23 .21	47.5 0.8	33.01 .15	79.5 0.4	43.96 .16	20.7 0.4	50.78 .67	52.6 1.0
Apr. 9.2	1.04 - .17	46.6 -1.0	32.87 - .13	78.9 +0.7	43.81 - .14	20.3 -0.4	50.15- .59	51.3 -1.5
19.1	0.88 .13	45.5 1.2	32.75 .10	78.1 0.9	43.69 .10	19.8 0.5	49.60 .49	49.6 1.9
29.1	0.78 .08	44.2 1.3	32.67 .06	77.1 1.1	43.60 .06	19.3 0.5	49.17 .36	47.5 2.2
May 9.1	0.73 - .02	42.8 1.4	32.63 - .02	75.8 1.4	43.46 - .02	18.7 0.5	48.88 .22	45.2 2.5
19.1	0.75 +.05	41.4 1.4	32.63 +.02	74.4 1.5	43.57 +.03	18.2 0.5	48.74- .06	42.6 2.6
29.0	0.83 +.11	40.0 -1.4	32.67 +.06	72.7 +1.7	43.63 +.08	17.8 -0.4	48.75+ .09	40.0 -2.7
June 8.0	0.96 .17	38.7 1.3	32.76 .11	71.0 1.8	43.74 .13	17.4 0.3	48.92 .24	37.3 2.7
18.0	1.16 .22	37.5 1.2	32.88 .15	69.1 1.9	43.89 .18	17.1 0.2	49.24 .39	34.6 2.6
27.9	1.40 .27	36.4 1.0	33.05 .18	67.2 1.9	44.09 .21	17.0 -0.1	49.70 .53	32.1 2.4
July 7.9	1.70 .31	35.5 0.8	33.24 .21	65.3 1.9	44.32 .25	16.9 0.0	50.29 .65	29.8 2.2
17.9	2.03 +.35	34.7 -0.6	33.47 +.24	63.5 +1.8	44.59 +.28	17.0 +0.1	51.00+ .76	27.7 -1.9
27.9	2.40 .38	34.2 0.4	33.72 .26	61.7 1.6	44.88 .30	17.1 0.2	51.81 .85	25.9 1.6
Aug. 6.8	2.79 .40	33.9 0.2	33.99 .28	60.2 1.4	45.19 .32	17.3 0.2	52.71 .93	24.5 1.3
16.8	3.20 .41	33.7 -0.1	34.28 .29	58.9 1.2	45.52 .33	17.6 0.3	53.67 .99	23.4 0.9
26.8	3.62 .42	33.8 +0.1	34.57 .29	57.9 0.9	45.86 .34	17.9 0.3	54.68 1.03	22.6 0.5
Sept. 5.8	4.05 +.43	34.0 +0.3	34.86 +.29	57.2 +0.5	46.20 +.34	18.2 +0.3	55.73+1.05	22.3 -0.1
15.7	4.47 .42	34.4 0.5	35.16 .29	56.8 +0.2	46.54 .34	18.5 0.3	56.79 1.06	22.4 +0.3
25.7	4.89 .41	35.0 0.6	35.45 .29	56.8 -0.2	46.89 .34	18.8 0.3	57.85 1.05	22.9 0.7
Oct. 5.7	5.30 .40	35.7 0.8	35.73 .28	57.2 0.6	47.22 .33	19.1 0.3	58.89 1.02	23.7 1.1
15.6	5.70 .38	36.5 0.9	36.00 .26	58.0 0.9	47.54 .32	19.4 0.3	59.89 .97	25.0 1.4
25.6	6.07 +.36	37.5 +1.1	36.26 +.24	59.1 -1.2	47.85 +.30	19.7 +0.3	60.83+ .90	26.6 +1.8
Nov. 4.6	6.41 .33	38.7 1.2	36.49 .22	60.4 1.5	48.14 .28	20.0 0.3	61.69 .82	28.5 2.1
14.6	6.72 .29	39.9 1.3	36.70 .19	62.0 1.7	48.41 .25	20.2 0.3	62.46 .71	30.8 2.4
24.5	7.00 .25	41.2 1.4	36.88 .16	63.7 1.8	48.64 .22	20.5 0.3	63.11 .58	33.3 2.6
Dec. 4.5	7.22 .20	42.6 1.4	37.02 .13	65.6 1.8	48.84 .18	20.9 0.3	63.63 .44	36.0 2.8
14.5	7.39 +.14	44.1 +1.4	37.13 +.09	67.4 -1.8	48.99 +.13	21.2 +0.4	64.00+ .29	38.8 +2.8
24.5	7.50 .08	45.5 1.4	37.20 .05	69.2 1.7	49.10 .09	21.6 0.4	64.20+ .12	41.7 2.8
34.4	7.55 +.02	46.9 +1.3	37.23 +.01	70.9 -1.6	49.16 +.05	22.0 +0.4	64.25- .06	44.5 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ϵ Orionis.		α Columbae.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 5 26	° ' " — 0 22	h m 5 28	° ' " —17 53	h m 5 30	° ' " — 1 15	h m 5 35	° ' " —34 7
	s	"	s	"	s	"	s	"
Jan. 0.4	43.32 +.04	28.1 -1.3	10.35 +.02	43.9 -2.1	57.89 +.05	60.1 -1.3	54.98 .00	43.4 -2.9
10.4	43.35 .00	29.3 1.2	10.36 -.02	46.0 2.0	57.91 .00	61.4 1.2	54.96 -.05	46.1 2.6
20.4	43.33 -.04	30.5 1.0	10.32 .06	47.9 1.7	57.90 -.04	62.6 1.1	54.89 .09	48.6 2.3
30.4	43.26 .08	31.4 0.8	10.23 .10	49.5 1.4	57.84 .08	63.5 0.9	54.77 .14	50.7 1.9
Feb. 9.3	43.16 .11	32.2 0.7	10.11 .14	50.8 1.1	57.74 .11	64.3 0.7	54.61 .18	52.4 1.5
19.3	43.03 -.14	32.7 -0.5	9.96 -.16	51.8 -0.8	57.61 -.14	65.0 -0.5	54.42 -.21	53.8 -1.1
29.3	42.88 .16	33.2 0.3	9.79 .18	52.4 0.5	57.46 .16	65.4 0.3	54.20 .23	54.6 0.7
Mar. 10.3	42.72 .17	33.4 -0.1	9.60 .19	52.7 -0.1	57.29 .17	65.6 -0.1	53.96 .24	55.1 -0.2
20.2	42.55 .16	33.4 0.0	9.41 .19	52.7 +0.2	57.12 .17	65.7 0.0	53.73 .23	55.0 +0.3
30.2	42.39 .15	33.3 +0.2	9.23 .17	52.3 0.5	56.96 .15	65.5 +0.2	53.50 .22	54.5 0.7
Apr. 9.2	42.24 -.13	33.0 +0.4	9.06 -.15	51.6 +0.8	56.81 -.13	65.2 +0.4	53.28 -.20	53.6 +1.1
19.2	42.12 .10	32.5 0.6	8.92 .12	50.6 1.1	56.69 .11	64.7 0.6	53.10 .17	52.3 1.5
29.1	42.04 .07	31.8 0.8	8.81 .09	49.3 1.4	56.60 .07	64.0 0.8	52.94 .13	50.6 1.8
May 9.1	41.99 -.03	31.0 0.9	8.74 .05	47.8 1.7	56.55 -.03	63.1 1.0	52.83 .09	48.6 2.2
19.1	41.98 +.01	30.0 1.1	8.71 -.01	46.0 1.9	56.53 +.01	62.1 1.1	52.76 -.04	46.3 2.4
29.0	42.01 +.06	28.8 +1.2	8.73 +.04	44.0 +2.1	56.57 +.05	60.9 +1.2	52.74 .00	43.7 +2.6
June 8.0	42.09 .10	27.5 1.3	8.79 .08	41.8 2.2	56.64 .09	59.6 1.3	52.77 +.05	41.0 2.8
18.0	42.21 .14	26.1 1.4	8.89 .12	39.6 2.3	56.75 .13	58.2 1.4	52.84 .10	38.2 2.9
28.0	42.37 .17	24.7 1.5	9.03 .16	37.3 2.3	56.90 .17	56.7 1.5	52.96 .14	35.3 2.9
July 7.9	42.55 .20	23.2 1.5	9.21 .19	35.0 2.2	57.09 .20	55.2 1.5	53.13 .18	32.4 2.8
17.9	42.77 +.23	21.8 +1.4	9.42 +.22	32.8 +2.1	57.30 +.23	53.7 +1.4	53.33 +.22	29.7 +2.6
27.9	43.02 .25	20.4 1.3	9.65 .25	30.8 1.9	57.54 .25	52.3 1.3	53.56 .25	27.2 2.4
Aug. 6.8	43.28 .27	19.1 1.2	9.91 .27	28.9 1.7	57.81 .27	51.0 1.2	53.83 .28	25.0 2.0
16.8	43.56 .28	18.0 1.0	10.19 .28	27.4 1.4	58.08 .28	49.9 1.0	54.12 .30	23.1 1.7
26.8	43.85 .29	17.2 0.7	10.48 .29	26.2 1.0	58.37 .29	49.0 0.7	54.42 .31	21.6 1.2
Sept. 5.8	44.14 +.30	16.5 +0.5	10.77 +.30	25.4 +0.6	58.66 +.29	48.4 +0.5	54.74 +.32	20.7 +0.7
15.7	44.44 .30	16.2 +0.2	11.07 .30	25.1 +0.1	58.95 .29	48.1 +0.2	55.07 .33	20.3 +0.1
25.7	44.73 .29	16.2 -0.1	11.37 .30	25.2 -0.3	59.25 .29	48.1 -0.1	55.39 .32	20.5 -0.4
Oct. 5.7	45.02 .28	16.4 0.4	11.66 .29	25.7 0.8	59.54 .29	48.3 0.4	55.71 .31	21.2 1.0
15.7	45.30 .27	17.0 0.7	11.94 .28	26.7 1.2	59.82 .28	48.9 0.7	56.02 .30	22.4 1.5
25.6	45.57 +.26	17.8 -0.9	12.21 +.26	28.1 -1.6	60.09 +.26	49.8 -1.0	56.31 +.28	24.2 -2.0
Nov. 4.6	45.82 .24	18.9 1.1	12.45 .23	29.8 1.9	60.35 .24	50.9 1.2	56.58 .25	26.4 2.4
14.6	46.05 .21	20.1 1.3	12.68 .21	31.8 2.1	60.57 .22	52.2 1.4	56.81 .22	29.0 2.7
24.5	46.25 .18	21.4 1.4	12.87 .18	34.0 2.3	60.78 .19	53.6 1.5	57.01 .18	31.8 2.9
Dec. 4.5	46.42 .15	22.9 1.4	13.03 .14	36.4 2.4	60.95 .15	55.1 1.5	57.17 .13	34.8 3.0
14.5	46.55 +.11	24.3 -1.4	13.15 +.10	38.8 -2.3	61.09 +.12	56.6 -1.5	57.28 +.09	37.9 -3.0
24.5	46.64 .07	25.7 1.4	13.22 .05	41.0 2.2	61.18 .07	58.1 1.4	57.34 +.04	40.9 2.9
34.4	46.69 +.01	27.1 -1.3	13.25 +.01	43.3 -2.1	61.24 +.03	59.5 -1.3	57.35 -.01	43.8 -2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Orionis.		♋ Orionis.		♏ Camelop. (H.)		♊ Geminorum.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 5 49	° ' " + 7 23	h m 6 1	° ' " + 14 46	h m 6 7	° ' " + 69 21	h m 6 16	° ' " + 22 34
Jan. 0.5	34.27 +.07	21.9 -0.9	39.99 +.09	57.5 -0.5	27.72 +.15	31.0 +2.6	42.17 +.11	6.9 0.0
10.4	34.32 +.03	21.0 0.8	40.06 +.04	57.0 0.4	27.81 +.03	33.6 2.5	42.25 .06	6.9 0.0
20.4	34.32 -.02	20.2 0.7	40.07 -.01	56.6 0.3	27.78 -.10	36.0 2.4	42.29 +.01	7.0 +0.1
30.4	34.28 .06	19.6 0.6	40.04 .05	56.3 0.3	27.62 .22	38.3 2.2	42.27 -.04	7.1 0.1
Feb. 9.4	34.20 .10	19.0 0.5	39.97 .09	56.1 0.2	27.34 .32	40.3 1.8	42.21 .09	7.2 0.1
19.3	34.08 -.13	18.6 -0.3	39.86 -.12	55.9 -0.1	26.98 -.41	42.0 +1.4	42.10 -.12	7.4 +0.1
29.3	33.94 .15	18.3 0.2	39.72 .15	55.8 0.1	26.53 .47	43.2 1.0	41.96 .15	7.5 0.1
Mar. 10.3	33.78 .16	18.2 -0.1	39.56 .16	55.8 -0.1	26.03 .51	44.0 +0.5	41.80 .17	7.6 +0.1
20.3	33.61 .17	18.1 0.0	39.39 .17	55.7 0.0	25.51 .52	44.3 0.0	41.63 .17	7.7 0.0
30.2	33.45 .16	18.1 +0.1	39.22 .16	55.7 0.0	24.99 .51	44.0 -0.5	41.45 .17	7.7 0.0
Apr. 9.2	33.30 -.14	18.2 +0.2	39.07 -.14	55.7 0.0	24.50 -.47	43.3 -0.9	41.29 -.15	7.6 -0.1
19.2	33.17 .11	18.5 0.3	38.94 .12	55.7 +0.1	24.06 .40	42.1 1.4	41.14 .13	7.5 0.1
29.1	33.07 .08	18.8 0.4	38.83 .09	55.8 0.1	23.69 .32	40.5 1.8	41.03 .10	7.3 0.2
May 9.1	33.01 -.04	19.3 0.5	38.77 .05	56.0 0.2	23.41 .23	38.6 2.1	40.95 .06	7.2 0.2
19.1	32.99 .00	19.8 0.6	38.74 -.01	56.2 0.2	23.23 .12	36.4 2.3	40.91 -.02	7.0 0.2
29.1	33.01 +.04	20.5 +0.7	38.75 +.04	56.4 +0.3	23.16 .01	34.0 -2.4	40.91 +.02	6.9 -0.1
June 8.0	33.08 .08	21.3 0.8	38.81 .08	56.8 0.4	23.20 +.10	31.6 2.5	40.96 .07	6.7 0.1
18.0	33.18 .12	22.2 0.9	38.91 .12	57.2 0.4	23.35 .21	29.1 2.5	41.05 .11	6.7 -0.1
28.0	33.32 .16	23.2 1.0	39.05 .16	57.7 0.5	23.61 .31	26.6 2.4	41.18 .15	6.6 0.0
July 8.0	33.50 .19	24.1 1.0	39.22 .19	58.2 0.5	23.97 .41	24.2 2.3	41.35 .19	6.6 0.0
17.9	33.71 +.22	25.1 +1.0	39.43 +.22	58.7 +0.6	24.43 +.49	21.9 -2.1	41.55 +.22	6.7 0.0
27.9	33.94 .25	26.1 0.9	39.66 .25	59.3 0.5	24.96 .57	19.9 1.9	41.79 .25	6.7 +0.1
Aug. 6.9	34.20 .26	27.0 0.8	39.92 .27	59.8 0.5	25.57 .64	18.1 1.7	42.05 .27	6.8 +0.1
16.8	34.47 .28	27.8 0.7	40.19 .28	60.3 0.4	26.24 .69	16.5 1.4	42.33 .29	6.8 0.0
26.8	34.76 .29	28.4 0.5	40.48 .30	60.6 0.3	26.96 .74	15.3 1.1	42.63 .31	6.9 0.0
Sept. 5.8	35.05 +.30	28.8 +0.3	40.79 +.31	60.9 +0.2	27.72 +.77	14.4 -0.7	42.94 +.32	6.8 -0.1
15.8	35.35 .30	29.1 +0.1	41.09 .31	61.0 0.0	28.50 .79	13.8 -0.4	43.26 .33	6.7 0.1
25.7	35.66 .30	29.1 -0.1	41.41 .31	60.9 -0.1	29.30 .80	13.6 0.0	43.58 .33	6.5 0.2
Oct. 5.7	35.96 .30	28.9 0.3	41.72 .31	60.7 0.3	30.10 .79	13.8 +0.3	43.91 .33	6.3 0.3
15.7	36.25 .29	28.4 0.5	42.03 .31	60.4 0.4	30.88 .78	14.3 0.7	44.24 .33	6.0 0.3
25.7	36.54 +.28	27.8 -0.7	42.33 +.30	59.9 -0.5	31.65 +.74	15.2 +1.1	44.57 +.32	5.6 -0.4
Nov. 4.6	36.81 .26	27.0 0.9	42.62 .28	59.3 0.6	32.37 .69	16.4 1.4	44.88 .30	5.2 0.4
14.6	37.06 .24	26.0 1.0	42.89 .26	58.7 0.7	33.04 .63	18.0 1.7	45.17 .28	4.8 0.4
24.6	37.29 .21	25.0 1.1	43.14 .23	58.0 0.7	33.64 .55	19.9 2.0	45.45 .26	4.4 0.4
Dec. 4.5	37.49 .18	23.9 1.1	43.36 .20	57.3 0.7	34.14 .46	22.0 2.3	45.69 .23	4.1 0.3
14.5	37.65 +.14	22.9 -1.1	43.54 +.16	56.6 -0.7	34.55 +.35	24.4 +2.4	45.90 +.19	3.8 -0.2
24.5	37.77 .10	21.8 1.0	43.68 .12	56.0 0.6	34.84 .23	26.9 2.5	46.06 .14	3.6 -0.1
34.5	37.85 +.05	20.8 -1.0	43.77 +.07	55.4 -0.5	35.01 +.10	29.5 +2.6	46.18 +.09	3.5 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Argus. (Canopus.)		γ Geminorum.		α Canis Majoris. (Sirius.)		ϵ Canis Majoris	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 6 21	° ' —52 37	h m 6 31	° ' +16 29	h m 6 40	° ' —16 34	h m 6 54	° ' —28 49
	s	"	s	"	s	"	s	"
Jan. 0.5	41.03 +.01	74.4 —3.6	44.18 +.12	22.3 —0.5	35.79 +.10	17.8 —2.4	34.15 +.10	44.5 —3.0
10.5	41.01 —.06	77.9 3.4	44.28 .07	21.9 0.4	35.86 +.05	20.2 2.3	34.23 +.05	47.5 2.9
20.4	40.92 .13	81.1 3.1	44.33 +.02	21.5 0.3	35.89 .00	22.4 2.1	34.25 .00	50.3 2.7
30.4	40.76 .19	84.0 2.7	44.32 —.03	21.3 0.2	35.86 —.05	24.4 1.9	34.22 —.06	52.8 2.4
Feb. 9.4	40.54 .25	86.5 2.3	44.27 .07	21.2 —0.1	35.79 .09	26.1 1.6	34.14 .10	55.0 2.1
19.4	40.27 —.29	88.6 —1.8	44.18 —.11	21.1 0.0	35.68 —.13	27.5 —1.3	34.02 —.14	56.9 —1.7
29.3	39.96 .34	90.2 1.3	44.05 .14	21.1 0.0	35.54 .16	28.6 0.9	33.86 .17	58.5 1.3
Mar. 10.3	39.62 .35	91.3 0.8	43.90 .16	21.1 0.0	35.37 .17	29.4 0.6	33.67 .20	59.6 0.9
20.3	39.26 .36	91.8 —0.3	43.74 .17	21.1 +0.1	35.18 .18	29.8 —0.3	33.46 .21	60.3 0.5
30.3	38.91 .35	91.9 +0.2	43.57 .17	21.2 0.1	35.00 .18	30.0 0.0	33.25 .21	60.6 —0.1
Apr. 9.2	38.56 —.34	91.4 +0.7	43.40 —.15	21.2 +0.1	34.82 —.17	29.8 +0.3	33.04 —.20	60.4 +0.3
19.2	38.24 .31	90.4 1.2	43.26 .13	21.3 0.1	34.65 .15	29.3 0.6	32.84 .19	59.9 0.7
29.2	37.95 .27	88.9 1.7	43.14 .10	21.4 0.1	34.51 .13	28.5 0.9	32.67 .16	59.0 1.1
May 9.1	37.70 .22	87.1 2.1	43.05 .07	21.5 0.1	34.39 .10	27.4 1.2	32.52 .13	57.8 1.4
19.1	37.50 .17	84.8 2.4	43.00 —.05	21.6 0.1	34.31 .06	26.1 1.4	32.40 .10	56.2 1.7
29.1	37.35 —.12	82.2 +2.7	42.99 +.01	21.7 +0.1	34.27 —.03	24.5 +1.6	32.33 —.06	54.4 +2.0
June 8.1	37.27 —.06	79.3 3.0	43.02 .05	21.9 0.2	34.26 +.01	22.8 1.8	32.29 —.02	52.2 2.4
18.0	37.24 +.01	76.2 3.1	43.10 .09	22.2 0.2	34.29 .05	20.9 2.0	32.29 +.02	49.9 2.5
28.0	37.28 .07	73.0 3.2	43.21 .13	22.4 0.3	34.37 .09	18.9 2.0	32.34 .07	47.4 2.5
July 8.0	37.37 .12	69.8 3.2	43.36 .17	22.7 0.3	34.48 .13	16.9 2.0	32.42 .10	44.9 2.5
18.0	37.52 +.18	66.7 +3.1	43.54 +.20	23.1 +0.3	34.62 +.16	14.9 +1.9	32.55 +.14	42.4 +2.5
27.9	37.73 .23	63.7 2.9	43.75 .22	23.4 0.3	34.79 .19	13.0 1.8	32.71 .18	40.0 2.3
Aug. 6.9	37.99 .28	60.9 2.6	43.99 .25	23.7 0.2	35.00 .22	11.3 1.6	32.90 .21	37.8 2.1
16.9	38.29 .32	58.6 2.2	44.25 .27	23.9 0.2	35.23 .24	9.8 1.4	33.12 .24	35.8 1.8
26.8	38.64 .35	56.6 1.7	44.52 .28	24.0 +0.1	35.48 .26	8.5 1.1	33.37 .26	34.1 1.5
Sept. 5.8	39.01 +.38	55.2 +1.1	44.82 +.30	24.0 0.0	35.75 +.27	7.6 +0.7	33.65 +.28	32.9 +1.0
15.8	39.40 .40	54.3 +0.5	45.12 .31	23.9 —0.1	36.03 .29	7.2 +0.3	33.94 .30	32.0 +0.5
25.8	39.81 .41	54.1 —0.1	45.43 .32	23.7 0.3	36.32 .30	7.1 —0.1	34.24 .31	31.8 0.0
Oct. 5.7	40.22 .41	54.5 0.7	45.75 .32	23.3 0.4	36.62 .30	7.4 0.6	34.56 .32	32.0 —0.5
15.7	40.63 .40	55.5 1.3	46.07 .32	22.8 0.6	36.92 .30	8.3 1.0	34.88 .32	32.8 1.0
25.7	41.02 +.38	57.2 —1.9	46.39 +.31	22.2 —0.7	37.22 +.29	9.5 —1.4	35.20 +.31	34.0 —1.5
Nov. 4.7	41.39 .35	59.4 2.5	46.69 .30	21.5 0.7	37.51 .28	11.2 1.8	35.51 .30	35.8 2.0
14.6	41.71 .30	62.1 2.9	46.99 .28	20.8 0.8	37.78 .26	13.1 2.1	35.81 .28	38.0 2.4
24.6	42.00 .25	65.3 3.3	47.26 .26	20.0 0.8	38.04 .24	15.4 2.3	36.08 .26	40.6 2.7
Dec. 4.6	42.22 .19	68.7 3.5	47.51 .23	19.2 0.7	38.26 .21	17.8 2.5	36.32 .22	43.4 2.9
14.5	42.38 +.13	72.2 —3.6	47.72 +.19	18.5 —0.7	38.45 +.17	20.3 —2.5	36.52 +.18	46.4 —3.0
24.5	42.48 +.06	75.9 3.5	47.89 .15	17.9 0.6	38.60 .12	22.9 2.5	36.68 .13	49.4 3.0
34.5	42.50 —.01	79.4 —3.5	48.02 +.10	17.4 —0.5	38.70 +.08	25.4 —2.4	36.79 +.09	52.5 —3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Canis Majoris.		δ Geminorum.		Piazzii vii, 67.		α^8 Geminorum. (Castor.)	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 7 4	° ' " -26 13	h m 7 13	° ' " +22 10	h m 7 20	° ' " +68 40	h m 7 27	° ' " +32 6
Jan. 0.5	11.53 +.11	34.7 -2.9	56.78 +.17	28.9 -0.3	8.80 +.34	42.5 +2.4	60.20 +.19	62.4 +0.3
10.5	11.62 .06	37.6 2.8	56.93 .12	28.7 -0.1	9.08 .22	44.9 2.5	60.38 .14	62.7 0.4
20.5	11.66 +.01	40.3 2.6	57.02 .07	28.6 0.0	9.24 +.09	47.4 2.5	60.49 .09	63.2 0.6
30.4	11.64 -.04	42.8 2.3	57.06 +.02	28.7 +0.1	9.26 -.04	49.9 2.5	60.55 +.03	63.9 0.7
Feb. 9.4	11.58 .09	45.0 2.0	57.04 -.04	28.8 0.2	9.16 .16	52.3 2.3	60.55 -.03	64.6 0.7
19.4	11.47 -.13	46.9 -1.7	56.98 -.08	29.1 +0.3	8.94 -.27	54.6 +2.1	60.49 -.08	65.4 +0.7
29.4	11.32 .16	48.4 1.3	56.87 .12	29.4 0.3	8.62 .36	56.5 1.7	60.38 .12	66.1 0.7
Mar. 10.3	11.15 .18	49.5 0.9	56.74 .15	29.6 0.3	8.23 .43	58.0 1.3	60.24 .15	66.8 0.6
20.3	10.95 .20	50.3 0.5	56.58 .16	29.9 0.3	7.77 .48	59.2 0.9	60.07 .18	67.3 0.5
30.3	10.75 .20	50.6 -0.2	56.41 .17	30.1 0.2	7.27 .50	59.8 +0.4	59.89 .18	67.7 0.3
Apr. 9.2	10.55 -.20	50.6 +0.2	56.24 -.16	30.3 +0.1	6.78 -.49	60.0 -0.1	59.70 -.18	68.0 +0.2
19.2	10.36 .18	50.2 0.6	56.08 .15	30.4 +0.1	6.29 .46	59.7 0.6	59.53 .17	68.1 0.0
29.2	10.18 .16	49.4 1.0	55.94 .13	30.5 0.0	5.85 .41	58.9 1.0	59.37 .15	68.0 -0.2
May 9.2	10.04 .13	48.3 1.3	55.83 .10	30.4 0.0	5.46 .35	57.6 1.4	59.23 .12	67.8 0.3
19.1	9.92 .10	46.8 1.6	55.75 .06	30.4 -0.1	5.15 .27	56.0 1.8	59.13 .08	67.4 0.4
29.1	9.85 -.06	45.1 +1.9	55.71 -.02	30.3 -0.1	4.93 -.18	54.1 -2.1	59.07 -.04	66.9 -0.5
June 8.1	9.81 -.02	43.1 2.1	55.70 +.02	30.2 0.1	4.79 -.08	51.8 2.3	59.05 .00	66.3 0.6
18.1	9.81 +.02	40.9 2.2	55.74 .05	30.0 0.1	4.76 +.02	49.4 2.5	59.08 +.04	65.7 0.7
28.0	9.85 .06	38.6 2.3	55.81 .09	29.9 0.2	4.83 .12	46.8 2.6	59.14 .09	65.0 0.8
July 8.0	9.92 .10	36.2 2.4	55.93 .13	29.7 0.2	5.00 .21	44.2 2.6	59.25 .12	64.2 0.8
18.0	10.04 +.13	33.8 +2.4	56.08 +.16	29.5 -0.2	5.26 +.31	41.6 -2.6	59.39 +.16	63.4 -0.8
28.0	10.19 .17	31.5 2.2	56.26 .19	29.3 0.2	5.61 .39	39.0 2.5	59.57 .20	62.5 0.8
Aug. 6.9	10.38 .20	29.4 2.0	56.46 .22	29.1 0.3	6.04 .47	36.5 2.4	59.78 .23	61.7 0.9
16.9	10.59 .23	27.4 1.8	56.70 .25	28.8 0.3	6.56 .54	34.1 2.2	60.03 .26	60.8 0.9
26.9	10.83 .25	25.8 1.4	56.96 .27	28.5 0.4	7.13 .61	32.0 2.0	60.30 .28	59.9 0.9
Sept. 5.8	11.10 +.27	24.6 +1.0	57.24 +.29	28.1 -0.5	7.77 +.66	30.1 -1.8	60.59 +.30	59.0 -0.9
15.8	11.38 .29	23.8 0.5	57.53 .30	27.6 0.6	8.46 .71	28.4 1.5	60.90 .32	58.1 0.9
25.8	11.68 .31	23.5 +0.1	57.85 .32	27.0 0.6	9.18 .74	27.1 1.2	61.24 .34	57.2 0.9
Oct. 5.8	11.99 .31	23.7 -0.5	58.17 .33	26.3 0.7	9.94 .77	26.1 0.8	61.59 .35	56.3 0.9
15.7	12.31 .32	24.4 1.0	58.50 .33	25.5 0.8	10.71 .78	25.5 0.4	61.95 .36	55.5 0.8
25.7	12.62 +.31	25.7 -1.5	58.84 +.34	24.7 -0.8	11.49 +.77	25.2 -0.1	62.31 +.37	54.7 -0.8
Nov. 4.7	12.93 .30	27.4 1.9	59.17 .33	23.9 0.8	12.26 .76	25.3 +0.4	62.68 .36	53.9 0.7
14.6	13.23 .29	29.5 2.3	59.50 .32	23.1 0.8	13.01 .72	25.9 0.8	63.04 .35	53.3 0.6
24.6	13.51 .26	31.9 2.6	59.81 .30	22.3 0.7	13.71 .67	26.9 1.2	63.39 .33	52.8 0.4
Dec. 4.6	13.76 .23	34.7 2.8	60.10 .27	21.6 0.6	14.35 .60	28.2 1.5	63.71 .31	52.5 -0.2
14.6	13.97 +.19	37.5 -2.9	60.36 +.23	21.0 -0.5	14.91 +.51	30.0 +1.9	64.00 +.27	52.4 0.0
24.5	14.14 .14	40.5 3.0	60.58 .20	20.5 0.4	15.37 .41	32.0 2.1	64.25 .23	52.4 +0.2
34.5	14.26 +.10	43.5 -2.9	60.76 +.15	20.2 -0.2	15.72 +.29	34.2 +2.3	64.46 +.18	52.7 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Minoris. (Procyon.)		β Geminorum. (Pollux.)		ϕ Geminorum.		3 Ursæ Majoris (H.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 7 33	° ' " + 5 29	h m 7 38	° ' " +28 16	h m 7 47	° ' " +27 1	h m 8 2	° ' " +68 46
	s	"	s	"	s	"	s	"
Jan. 0.5	53.35 +.17	32.8 -1.4	59.31 +.20	40.0 0.0	10.11 +.21	67.2 -0.1	33.16 +.44	45.4 +2.1
10.5	53.50 .12	31.5 1.3	59.49 .15	40.1 +0.2	10.29 .16	67.2 +0.1	33.55 .32	47.6 2.3
20.5	53.60 .07	30.3 1.1	59.61 .10	40.3 0.4	10.43 .10	67.3 0.4	33.81 .20	50.0 2.5
30.5	53.65 +.02	29.2 0.9	59.68 +.04	40.7 0.5	10.50 +.05	67.6 0.2	33.94 +.07	52.5 2.5
Feb. 9.4	53.65 -.02	28.4 0.7	59.68 -.01	41.2 0.6	10.52 -.01	68.1 0.5	33.94 -.06	55.1 2.5
19.4	53.60 -.07	27.8 -0.6	59.64 -.06	41.8 +0.6	10.48 -.06	68.6 +0.5	33.82 -.18	57.5 +2.3
29.4	53.51 .11	27.3 0.4	59.55 .11	42.4 0.6	10.40 .10	69.2 0.6	33.59 .28	59.7 2.1
Mar. 10.4	53.39 .13	27.0 0.2	59.42 .14	43.0 0.6	10.28 .13	69.7 0.6	33.25 .37	61.7 1.8
20.3	53.25 .13	26.9 -0.1	59.27 .16	43.5 0.5	10.13 .16	70.3 0.5	32.84 .43	63.3 1.4
30.3	53.09 .16	26.8 0.0	59.10 .17	43.9 0.4	9.97 .17	70.7 0.4	32.38 .47	64.5 0.9
Apr. 9.3	52.93 -.16	26.9 +0.1	58.92 -.17	44.3 +0.3	9.79 -.17	71.1 +0.3	31.89 -.49	65.2 +0.4
19.2	52.78 .14	27.1 0.2	58.75 .16	44.5 +0.2	9.63 .16	71.3 0.2	31.40 .48	65.3 0.0
29.2	52.64 .13	27.4 0.3	58.59 .14	44.5 0.0	9.47 .14	71.4 +0.1	30.93 .46	65.1 -0.5
May 9.2	52.52 .10	27.8 0.4	58.46 .11	44.4 -0.1	9.34 .12	71.4 -0.1	30.49 .41	64.3 1.0
19.2	52.43 .07	28.3 0.5	58.36 .08	44.2 0.2	9.23 .09	71.2 0.2	30.11 .34	63.1 1.4
29.1	52.38 -.04	28.8 +0.6	58.29 -.05	43.9 -0.3	9.17 -.05	71.0 -0.3	29.80 -.27	61.4 -1.8
June 8.1	52.35 -.01	29.4 0.6	58.26 -.01	43.5 0.4	9.13 -.01	70.7 0.4	29.58 .18	59.5 2.1
18.1	52.36 +0.3	30.1 0.7	58.27 +0.3	43.0 0.5	9.14 +0.3	70.3 0.4	29.44 -.09	57.2 2.4
28.0	52.41 .06	30.8 0.7	58.32 .07	42.5 0.5	9.18 .06	69.8 0.5	29.40 +0.01	54.7 2.6
July 8.0	52.49 .10	31.5 0.7	58.41 .11	41.9 0.5	9.27 .10	69.3 0.5	29.46 .10	52.0 2.7
18.0	52.60 +.13	32.2 +0.7	58.54 +.15	41.3 -0.6	9.38 +.14	68.8 -0.6	29.61 +.19	49.3 -2.8
28.0	52.74 .16	32.9 0.6	58.70 .18	40.7 0.6	9.54 .17	68.2 0.6	29.85 .28	46.5 2.8
Aug. 6.9	52.91 .18	33.4 0.5	58.90 .21	40.0 0.7	9.72 .20	67.5 0.7	30.18 .37	43.7 2.7
16.9	53.11 .21	33.9 0.4	59.12 .24	39.2 0.7	9.93 .23	66.8 0.7	30.59 .45	41.0 2.6
26.9	53.33 .23	34.2 +0.2	59.37 .26	38.5 0.8	10.17 .25	66.0 0.8	31.07 .52	38.4 2.5
Sept. 5.9	53.57 +.25	34.3 0.0	59.64 +.29	37.6 -0.8	10.44 +.28	65.2 -0.9	31.62 +.58	36.0 -2.3
15.8	53.83 .27	34.2 -0.2	59.94 .31	36.8 0.8	10.72 .30	64.3 0.9	32.24 .64	33.8 2.1
25.8	54.11 .29	33.8 0.5	60.25 .33	35.9 0.9	11.03 .32	63.3 0.9	32.91 .69	31.9 1.8
Oct. 5.8	54.41 .30	33.2 0.7	60.58 .34	34.9 0.9	11.36 .33	62.3 1.0	33.63 .73	30.2 1.3
15.8	54.71 .31	32.3 1.0	60.92 .35	34.0 0.9	11.70 .34	61.3 1.0	34.38 .76	28.9 1.1
25.7	55.02 +.31	31.3 -1.2	61.28 +.36	33.0 -0.9	12.05 +.35	60.3 -1.0	35.15 +.78	28.0 -0.7
Nov. 4.7	55.33 .31	30.0 1.4	61.63 .36	32.1 0.8	12.40 .35	59.3 1.0	35.93 .78	27.5 -0.3
14.7	55.64 .30	28.5 1.5	61.98 .35	31.2 0.7	12.75 .35	58.4 0.9	36.71 .76	27.5 +0.2
24.6	55.94 .29	27.0 1.6	62.32 .33	30.5 0.6	13.09 .33	57.5 0.8	37.45 .72	27.8 0.6
Dec. 4.6	56.22 .26	25.4 1.6	62.64 .31	29.9 0.5	13.42 .31	56.8 0.6	38.15 .67	28.6 1.0
14.6	56.47 +.23	23.8 1.6	62.93 +.28	29.5 -0.3	13.71 +.28	56.3 -0.5	38.79 +.59	29.9 +1.3
24.6	56.68 .19	22.2 1.5	63.19 .24	29.3 0.1	13.97 .24	55.9 0.3	39.34 .49	31.6 1.8
34.5	56.86 +.15	20.8 1.4	63.39 +.19	29.2 -0.1	14.19 +.19	55.7 -0.1	39.79 +.40	33.6 +2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argûs (ρ).			η Cancrî.			ϵ Hydræ.			ϵ Ursæ Majoris.		
	Right Ascension.	Declination South.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.	
	h m 8 3	° ' " -24 0		h m 8 26	° ' " +20 47		h m 8 41	° ' " + 6 47		h m 8 52	° ' " +48 26	
Jan. 0.6	8.53 +.18	9.6 -2.9		43.68 +.23	39.3 -0.6		17.84 +.23	62.2 -1.5		7.97 +.34	53.7 +0.7	
10.6	8.69 .13	12.5 2.9		43.89 .19	38.7 0.5		18.05 .19	60.8 1.4		8.29 .28	54.5 1.0	
20.5	8.79 .08	15.3 2.7		44.06 .14	38.3 0.3		18.21 .14	59.5 1.2		8.53 .21	55.6 1.3	
30.5	8.84 +.03	18.0 2.5		44.17 .09	38.2 -0.1		18.33 .09	58.4 1.0		8.71 .14	57.1 1.5	
Feb. 9.5	8.84 -0.3	20.4 2.3		44.23 +.03	38.2 +0.1		18.39 +.04	57.6 0.8		8.81 +.06	58.7 1.7	
19.4	8.79 -0.7	22.6 -2.0		44.23 -0.8	38.4 +0.5		18.41 -0.1	56.9 -0.5		8.83 -0.1	60.4 +1.7	
29.4	8.70 .11	24.4 1.7		44.19 .07	38.7 0.4		18.38 .05	56.5 0.3		8.79 .07	62.2 1.7	
Mar. 10.4	8.57 .14	25.9 1.3		44.10 .10	39.1 0.4		18.31 .09	56.2 -0.2		8.69 .13	63.8 1.6	
20.4	8.41 .17	27.0 0.9		43.99 .13	39.6 0.5		18.20 .11	56.1 0.0		8.53 .17	65.4 1.4	
30.3	8.23 .18	27.8 0.6		43.85 .15	40.1 0.4		18.08 .13	56.2 +0.1		8.34 .21	66.7 1.2	
Apr. 9.3	8.05 -1.8	28.2 -0.2		43.69 -1.5	40.5 +0.4		17.94 -1.4	56.3 +0.2		8.12 -0.23	67.8 +0.9	
19.3	7.87 .18	28.2 +0.1		43.54 .15	40.9 0.4		17.80 .14	56.6 0.3		7.88 .23	68.6 0.6	
29.2	7.70 .17	27.9 0.5		43.39 .14	41.2 0.5		17.66 .13	56.9 0.4		7.65 .23	69.0 +0.3	
May 9.2	7.54 .15	27.2 0.8		43.25 .12	41.4 0.2		17.53 .12	57.3 0.4		7.43 .21	69.1 -0.1	
19.2	7.40 .12	26.3 1.1		43.14 .10	41.6 +0.1		17.42 .10	57.7 0.5		7.23 .18	68.8 0.4	
29.2	7.30 -0.9	25.0 +1.4		43.05 -0.7	41.7 0.0		17.33 -0.8	58.2 +0.5		7.06 -1.15	68.2 -0.7	
June 8.1	7.22 .06	23.5 1.7		43.00 .04	41.7 0.0		17.27 .05	58.7 0.5		6.93 .11	67.3 1.0	
18.1	7.18 -0.8	21.7 1.9		42.97 -0.1	41.6 -0.1		17.23 -0.2	59.2 0.5		6.84 .07	66.2 1.3	
28.1	7.17 +0.1	19.8 2.0		42.98 +0.3	41.5 0.2		17.22 +0.1	59.8 0.5		6.80 -0.2	64.7 1.5	
July 8.1	7.20 .04	17.7 2.1		43.02 .06	41.3 0.2		17.25 .04	60.3 0.5		6.79 +.02	63.1 1.7	
18.0	7.26 +0.8	15.6 +2.1		43.09 +0.9	41.0 -0.3		17.30 +0.7	60.8 +0.5		6.84 +0.7	61.3 -1.9	
28.0	7.35 .11	13.5 2.1		43.20 .12	40.7 0.4		17.38 .10	61.2 0.4		6.93 .11	59.3 2.0	
Aug. 7.0	7.48 .14	11.5 1.9		43.33 .15	40.2 0.5		17.49 .12	61.5 0.5		7.07 .16	57.2 2.1	
16.9	7.64 .17	9.6 1.7		43.50 .18	39.7 0.6		17.63 .15	61.7 +0.1		7.24 .20	55.1 2.2	
26.9	7.83 .20	8.0 1.4		43.69 .21	39.0 0.7		17.79 .18	61.8 0.0		7.46 .24	52.9 2.2	
Sept. 5.9	8.04 +.23	6.6 +1.1		43.91 +.23	38.2 -0.8		17.98 +.20	61.7 -0.2		7.72 +.28	50.7 -2.2	
15.9	8.29 .26	5.7 0.7		44.15 .26	37.3 1.0		18.20 .23	61.4 0.4		8.03 .32	48.5 2.1	
25.8	8.56 .28	5.2 +0.3		44.42 .28	36.3 1.1		18.45 .26	60.8 0.7		8.36 .35	46.4 2.0	
Oct. 5.8	8.85 .30	5.2 -0.2		44.72 .30	35.2 1.2		18.71 .28	60.0 0.9		8.73 .39	44.4 1.9	
15.8	9.16 .32	5.6 0.7		45.03 .32	33.9 1.3		19.00 .30	59.0 1.1		9.14 .41	42.5 1.8	
25.8	9.49 +.32	6.6 -1.1		45.36 +.33	32.6 -1.3		19.31 +.31	57.7 -1.4		9.56 +.44	40.8 -1.6	
Nov. 4.7	9.81 .32	8.0 1.6		45.70 .34	31.3 1.4		19.62 .32	56.2 1.5		10.01 .45	39.3 1.5	
14.7	10.13 .32	9.8 2.1		46.04 .34	29.9 1.4		19.95 .33	54.6 1.7		10.47 .46	38.1 1.0	
24.7	10.45 .30	12.1 2.4		46.38 .34	28.6 1.3		20.27 .32	52.9 1.7		10.93 .46	37.3 0.7	
Dec. 4.6	10.74 .28	14.7 2.7		46.71 .32	27.3 1.2		20.59 .31	51.1 1.8		11.38 .44	36.7 -0.5	
14.6	11.01 +.25	17.5 -2.8		47.02 +.29	26.2 -1.0		20.89 +.29	49.4 -1.7		11.81 +.41	36.6 +0.1	
24.6	11.23 .21	20.4 2.9		47.30 .26	25.3 0.8		21.16 .25	47.7 1.6		12.20 .37	36.9 0.4	
34.6	11.42 +.17	23.3 -2.9		47.54 +.22	24.5 -0.5		21.40 +.22	46.1 -1.5		12.54 +.32	37.5 +0.8	

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Ursæ Majoris.		♋ Cancr.		♊ Argūs.		♈ Draconis (H.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 9 1	° ' +67 32	h m 9 2	° ' +11 4	h m 9 14	° ' -58 50	h m 9 22	° ' +81 46
Jan. 0.6	19.18 +.54	75.9 +1.5	8.59 +.26	71.8 -1.4	19.81 +.32	5.4 -3.6	26.88 +1.33	58.4 +1.8
10.6	19.67 .44	77.6 1.9	8.82 .21	70.5 1.2	20.09 .24	9.0 3.8	28.11 1.10	60.4 2.2
20.5	20.05 .33	79.6 2.2	9.01 .16	69.4 1.0	20.29 .16	12.9 3.9	29.09 .84	62.8 2.6
30.5	20.33 .21	82.0 2.4	9.15 .11	68.5 0.7	20.41 +.08	16.8 3.9	29.78 .54	65.5 2.8
Feb. 9.5	20.47 +.09	84.4 2.5	9.24 .06	67.9 0.5	20.45 .00	20.6 3.7	30.17+ .23	68.4 2.9
19.5	20.50 -.03	87.0 +2.5	9.27 +.01	67.5 -.03	20.40 -.08	24.2 -3.6	30.25- .08	71.4 +3.0
29.4	20.40 .15	89.5 2.4	9.27 -.03	67.3 -.01	20.28 .15	27.7 3.3	30.01 .38	74.4 2.8
Mar. 10.4	20.20 .24	91.9 2.2	9.21 .07	67.2 0.0	20.10 .21	30.8 3.0	29.49 .65	77.1 2.6
20.4	19.91 .33	94.0 1.9	9.13 .10	67.3 +0.2	19.85 .27	33.6 2.6	28.72 .88	79.6 2.3
30.4	19.55 .39	95.8 1.6	9.01 .12	67.5 0.3	19.56 .31	36.0 2.1	27.73 1.07	81.7 1.9
Apr. 9.3	19.13 -.43	97.1 +1.1	8.88 -.13	67.8 +0.3	19.24 -.33	37.9 -1.7	26.57-1.21	83.3 +1.4
19.3	18.69 .45	98.1 0.7	8.75 .14	68.2 0.4	18.89 .35	39.3 1.2	25.30 1.30	84.5 0.8
29.3	18.23 .45	98.5 +0.2	8.61 .13	68.6 0.4	18.54 .36	40.2 0.6	23.97 1.33	85.0 +0.3
May 9.2	17.79 .43	98.4 -0.3	8.48 .12	69.0 0.4	18.18 .35	40.6 -0.1	22.63 1.32	85.0 -0.3
19.2	17.38 .39	97.9 0.8	8.36 .11	69.4 0.4	17.83 .34	40.4 +0.4	21.33 1.25	84.4 0.8
29.2	17.01 -.34	96.9 -1.2	8.27 -.08	69.8 +0.4	17.51 -.31	39.8 +0.8	20.12-1.15	83.3 -1.4
June 8.2	16.70 .28	95.4 1.6	8.20 .06	70.1 0.4	17.21 .28	38.7 1.3	19.04 1.01	81.7 1.9
18.1	16.46 .20	93.6 2.0	8.15 .03	70.5 0.3	16.94 .24	37.1 1.8	18.11 .83	79.6 2.3
28.1	16.29 .13	91.4 2.3	8.13 -.01	70.8 0.3	16.72 .20	35.2 2.1	17.37 .64	77.1 2.7
July 8.1	16.21 -.05	89.0 2.6	8.14 +.02	71.1 0.2	16.54 .15	32.8 2.5	16.83 .43	74.3 3.0
18.1	16.20 +.03	86.3 -2.8	8.17 +.05	71.3 +0.2	16.42 -.09	30.2 +2.7	16.51- .21	71.2 -3.2
28.0	16.27 .12	83.4 2.9	8.24 .08	71.4 +0.1	16.36 -.03	27.4 2.9	16.41+ .01	67.9 3.4
Aug. 7.0	16.43 .20	80.5 3.0	8.33 .11	71.5 0.0	16.36 +0.3	24.5 2.9	16.54 .24	64.5 3.5
17.0	16.67 .28	77.5 3.0	8.45 .13	71.4 -0.2	16.42 .10	21.5 2.9	16.89 .47	61.0 3.5
26.9	16.99 .35	74.5 3.0	8.60 .16	71.2 0.3	16.56 .17	18.7 2.7	17.47 .69	57.5 3.4
Sept. 5.9	17.38 +.43	71.6 -2.9	8.77 +.19	70.7 -0.5	16.76 +.23	16.1 +2.5	18.26+ .89	54.1 -3.3
15.9	17.84 .50	68.7 2.7	8.98 .22	70.2 0.7	17.02 .30	13.7 2.1	19.26 1.09	50.8 3.2
25.9	18.37 .56	66.1 2.5	9.21 .25	69.4 0.9	17.35 .36	11.8 1.7	20.44 1.27	47.8 2.9
Oct. 5.8	18.96 .62	63.7 2.3	9.47 .27	68.4 1.1	17.74 .41	10.4 1.1	21.80 1.43	45.0 2.6
15.8	19.61 .66	61.5 2.0	9.75 .29	67.2 1.3	18.17 .45	9.6 0.6	23.31 1.57	42.6 2.2
25.8	20.29 +.70	59.7 -1.6	10.05 +.31	65.8 -1.5	18.65 +.49	9.3 +0.1	24.94+1.68	40.6 -1.8
Nov. 4.8	21.01 .73	58.3 1.2	10.37 .33	64.2 1.6	19.14 .50	9.7 -0.7	26.66 1.75	39.0 1.3
14.7	21.74 .74	57.3 0.8	10.70 .33	62.5 1.7	19.65 .51	10.7 1.4	28.44 1.78	38.0 0.8
24.7	22.48 .73	56.8 -0.3	11.04 .33	60.8 1.7	20.16 .49	12.4 2.0	30.23 1.78	37.4 -0.2
Dec. 4.7	23.20 .70	56.8 +0.2	11.37 .32	59.1 1.7	20.64 .46	14.7 2.5	31.99 1.72	37.5 +0.4
14.6	23.88 +.65	57.3 +0.7	11.68 +.30	57.4 -1.6	21.09 +.42	17.5 -3.0	33.67+1.61	38.1 +0.9
24.6	24.50 .58	58.2 1.2	11.97 .27	55.8 1.5	21.48 .36	20.7 3.4	35.21 1.45	39.3 1.4
34.6	25.04 +.50	59.6 +1.7	12.23 +.24	54.4 -1.3	21.81 +.30	24.2 -3.7	36.57+1.25	41.0 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Hydræ.		δ Ursæ Majoris.		θ Ursæ Majoris.		ϵ Leonis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 9 22	° ' " — 8 12	h m 9 25	° ' " +70 16	h m 9 25	° ' " +52 8	h m 9 39	° ' " +24 14
Jan. 0.6	30.02 +.35	25.4 -2.4	22.02 +.64	63.3 +1.3	56.81 +.40	54.9 +0.5	58.65 +.30	65.5 -0.9
10.6	30.26 .81	27.7 2.3	22.61 .54	64.8 1.8	57.17 .33	55.7 0.9	58.94 .26	64.7 0.6
20.6	30.45 .17	29.9 2.1	23.09 .42	66.8 2.2	57.48 .27	56.8 1.3	59.18 .21	64.3 -0.3
30.5	30.60 .12	31.9 2.0	23.45 .29	69.1 2.4	57.71 .19	58.3 1.6	59.37 .16	64.1 0.0
Feb. 9.5	30.70 .07	33.8 1.7	23.67 .15	71.7 2.6	57.86 .11	60.0 1.8	59.50 .11	64.2 +0.2
19.5	30.75 +.02	35.4 -1.5	23.75 +.02	74.3 +2.7	57.93 +.04	61.9 +1.9	59.58 +.06	64.5 +0.4
29.5	30.75 -.02	36.8 1.2	23.70 -.11	77.0 2.6	57.93 -.04	63.9 2.0	59.61 .00	65.1 0.6
Mar. 10.4	30.71 .06	37.9 1.0	23.52 .23	79.6 2.4	57.86 .10	65.9 1.9	59.59 -.04	65.8 0.7
20.4	30.63 .09	38.7 0.7	23.24 .33	81.9 2.2	57.72 .16	67.7 1.8	59.53 .08	66.6 0.8
30.4	30.53 .11	39.3 0.5	22.86 .42	84.0 1.8	57.54 .20	69.4 1.6	59.44 .11	67.4 0.8
Apr. 9.3	30.41 -.13	39.7 -0.2	22.42 -.47	85.6 +1.4	57.32 -.23	70.9 +1.3	59.32 -.13	68.2 +0.8
19.3	30.28 .13	39.8 0.0	21.92 .51	86.8 1.0	57.08 .25	72.0 0.9	59.18 .14	69.0 0.7
29.3	30.14 .13	39.7 +0.2	21.40 .52	87.5 +0.5	56.83 .25	72.7 0.6	59.04 .14	69.7 0.6
May 9.3	30.01 .13	39.4 0.4	20.89 .51	87.7 -0.1	56.58 .24	73.1 +0.2	58.90 .14	70.2 0.5
19.2	29.89 .11	38.9 0.6	20.39 .51	87.4 0.6	56.34 .22	73.1 -0.2	58.77 .13	70.6 0.3
29.2	29.78 -.10	38.3 +0.7	19.93 -.43	86.6 -1.0	56.13 -.19	72.7 -0.6	58.65 -.11	70.9 +0.2
June 8.2	29.69 .08	37.5 0.8	19.53 .37	85.3 1.5	55.95 .16	71.9 0.9	58.55 .09	71.0 0.0
18.2	29.63 .05	36.6 1.0	19.19 .30	83.6 1.9	55.81 .12	70.8 1.3	58.48 .06	71.0 -0.1
28.1	29.59 .03	35.5 1.1	18.93 .22	81.5 2.3	55.71 .08	69.4 1.6	58.43 .04	70.8 0.3
July 8.1	29.57 -.01	34.4 1.1	18.76 .13	79.1 2.6	55.65 -.03	67.7 1.8	58.40 -.02	70.5 0.4
18.1	29.57 +.02	33.3 +1.1	18.67 -.04	76.4 -2.8	55.64 +.01	65.8 -2.0	58.41 +.01	70.0 -0.6
28.0	29.61 .05	32.2 1.1	18.68 +.05	73.4 3.0	55.68 .06	63.6 2.2	58.44 .04	69.3 0.7
Aug. 7.0	29.67 .08	31.1 1.0	18.77 .14	70.4 3.1	55.76 .11	61.3 2.4	58.50 .07	68.5 0.9
17.0	29.76 .10	30.1 0.9	18.95 .23	67.3 3.2	55.89 .15	58.8 2.5	58.59 .10	67.6 1.0
27.0	29.88 .13	29.3 0.7	19.23 .32	64.0 3.2	56.07 .20	56.3 2.6	58.70 .13	66.5 1.2
Sept. 5.9	30.03 +.16	28.6 +0.5	19.60 +.41	60.8 -3.1	56.29 +.25	53.7 -2.6	58.85 +.17	65.2 -1.3
15.9	30.21 .19	28.3 +0.2	20.04 .49	57.7 3.0	56.56 .29	51.1 2.5	59.04 .20	63.8 1.5
25.9	30.41 .22	28.2 -0.1	20.57 .57	54.8 2.8	56.87 .33	48.6 2.5	59.25 .23	62.3 1.6
Oct. 5.9	30.65 .25	28.5 0.5	21.18 .64	52.1 2.6	57.22 .37	46.2 2.4	59.50 .26	60.6 1.7
15.8	30.92 .28	29.2 0.8	21.85 .70	49.6 2.3	57.62 .41	43.8 2.3	59.77 .29	58.8 1.8
25.8	31.21 +.30	30.2 -1.2	22.58 +.75	47.5 -1.9	58.05 +.44	41.7 -2.0	60.08 +.32	57.0 -1.8
Nov. 4.8	31.52 .32	31.5 1.5	23.35 .79	45.8 1.5	58.51 .47	39.9 1.7	60.41 .34	55.1 1.8
14.7	31.84 .33	33.1 1.8	24.15 .81	44.5 1.0	58.99 .48	38.3 1.4	60.75 .35	53.3 1.8
24.7	32.17 .33	35.1 2.0	24.97 .81	43.7 -0.5	59.48 .49	37.1 1.0	61.11 .36	51.5 1.7
Dec. 4.7	32.49 .32	37.2 2.2	25.78 .79	43.4 0.0	59.96 .48	36.3 0.6	61.47 .36	49.9 1.5
14.7	32.81 +.30	39.5 -2.3	26.56 +.75	43.6 +0.5	60.43 +.46	35.9 -0.2	61.82 +.34	48.4 -1.3
24.6	33.10 .28	41.9 2.4	27.28 .68	44.4 1.0	60.88 .42	35.9 +0.3	62.16 .32	47.2 1.1
34.6	33.36 +.24	44.2 -2.3	27.92 +.61	45.7 +1.5	61.27 +.38	36.4 +0.7	62.46 +.29	46.2 -0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.		α Leonis. (Regulus.)		32 Ursæ Majoris.		γ^1 Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 9 46	[°] ['] +26 29	^h ^m 10 2	[°] ['] +12 28	^h ^m 10 10	[°] ['] +65 37	^h ^m 10 14	[°] ['] +20 21
	^s	["]	^s	["]	^s	["]	^s	["]
Jan. 0.6	52.72 +.31	42.0 -0.8	51.47 +.30	27.9 -1.6	32.59 +.59	22.4 +0.7	15.86 +.31	57.0 -1.3
10.6	53.01 -.27	41.3 0.5	51.75 -.26	26.5 1.3	33.16 -.53	23.3 1.1	16.16 -.28	55.8 1.0
20.6	53.26 -.22	40.9 -0.2	51.99 -.22	25.2 1.0	33.65 -.44	24.7 1.6	16.43 -.24	55.0 0.7
30.6	53.46 -.17	40.9 +0.1	52.19 -.18	24.3 0.7	34.04 -.34	26.5 2.0	16.64 -.19	54.4 0.4
Feb. 9.5	53.60 -.12	41.1 0.3	52.34 -.13	23.6 0.5	34.33 -.24	28.7 2.3	16.81 -.14	54.2 -0.1
19.5	53.69 +.06	41.5 +0.6	52.44 +.08	23.1 -0.3	34.52 +.13	31.1 +2.5	16.93 +.09	54.2 +0.2
29.5	53.73 +.01	42.2 0.7	52.49 +.03	23.0 -0.1	34.59 +.02	33.7 2.6	16.99 +.04	54.5 0.4
Mar. 10.4	53.72 -.03	43.0 0.9	52.49 -.01	23.0 +0.1	34.55 -.09	36.3 2.6	17.01 .00	55.0 0.6
20.4	53.66 -.07	44.0 0.9	52.46 -.05	23.2 0.3	34.41 -.18	38.8 2.4	16.98 -.04	55.6 0.7
30.4	53.57 -.10	44.9 0.9	52.39 -.08	23.6 0.4	34.19 -.26	41.1 2.2	16.92 -.08	56.4 0.8
Apr. 9.4	53.45 -.13	45.8 +0.9	52.30 -.10	24.0 +0.5	33.90 -.32	43.2 +1.9	16.83 -.10	57.2 +0.8
19.3	53.31 -.14	46.7 0.8	52.18 .11	24.5 0.5	33.55 -.36	44.9 1.5	16.72 -.12	58.0 0.8
29.3	53.17 -.14	47.4 0.7	52.06 .12	25.0 0.6	33.17 -.39	46.1 1.0	16.60 -.12	58.7 0.7
May 9.1	53.02 -.14	48.0 0.5	51.94 .12	25.6 0.5	32.77 -.40	46.9 0.6	16.47 -.12	59.4 0.6
19.3	52.89 -.13	48.5 0.4	51.82 .11	26.1 0.5	32.37 -.39	47.3 +0.1	16.35 -.12	60.0 0.5
29.2	52.77 -.11	48.8 +0.2	51.72 -.10	26.6 +0.5	31.98 -.37	47.1 -0.4	16.23 -.11	60.5 +0.4
June 8.2	52.66 -.09	48.8 0.0	51.62 -.08	27.0 0.4	31.63 -.34	46.4 0.9	16.13 -.10	60.8 0.2
18.2	52.58 -.07	48.7 -0.2	51.54 -.07	27.4 0.3	31.31 -.29	45.3 1.3	16.04 -.08	61.0 +0.1
28.2	52.52 -.05	48.5 0.3	51.48 -.05	27.7 0.3	31.04 -.24	43.7 1.8	15.97 -.06	61.0 0.0
July 8.1	52.49 -.02	48.0 0.5	51.45 -.03	27.9 0.2	30.83 -.18	41.8 2.1	15.93 -.04	60.9 -0.2
18.1	52.49 +.01	47.4 -0.7	51.43 .00	27.9 +0.1	30.67 -.12	39.5 -2.5	15.90 -.01	60.6 -0.5
28.1	52.51 .04	46.7 0.8	51.44 +.02	27.9 0.0	30.58 -.05	36.9 2.7	15.90 +.01	60.2 0.5
Aug. 7.0	52.56 .07	45.7 1.0	51.47 .05	27.8 -0.2	30.56 +.01	34.0 2.9	15.93 .04	59.6 0.7
17.0	52.65 .10	44.6 1.2	51.54 .08	27.5 0.3	30.61 .08	31.0 3.1	15.98 .07	58.8 0.8
27.0	52.76 .13	43.4 1.3	51.62 .10	27.1 0.5	30.73 .16	27.8 3.2	16.06 .09	57.9 1.0
Sept. 6.0	52.90 +.16	42.0 -1.5	51.74 +.13	26.4 -0.7	30.93 +.23	24.5 -3.3	16.17 +.13	56.8 -1.2
15.9	53.08 .19	40.4 1.6	51.89 .16	25.6 0.9	31.19 .30	21.2 3.2	16.31 .16	55.5 1.4
25.9	53.29 .23	38.8 1.7	52.07 .20	24.6 1.1	31.53 .37	18.0 3.2	16.49 .19	54.0 1.6
Oct. 5.9	53.53 .26	37.0 1.8	52.28 .23	23.3 1.3	31.94 .44	14.9 3.0	16.70 .23	52.4 1.7
15.8	53.81 .29	35.1 1.9	52.53 .26	21.9 1.5	32.42 .51	12.0 2.8	16.94 .26	50.6 1.9
25.8	54.11 +.32	33.2 -1.9	52.80 +.29	20.3 -1.7	32.95 +.56	9.3 -2.5	17.22 +.29	48.7 -1.9
Nov. 4.8	54.44 .34	31.3 1.9	53.10 .31	18.5 1.8	33.55 .61	6.9 2.2	17.52 .32	46.7 2.0
14.8	54.79 .35	29.4 1.9	53.42 .33	16.6 1.9	34.18 .65	4.9 1.8	17.85 .34	44.6 2.0
24.7	55.15 .36	27.6 1.7	53.76 .34	14.6 1.9	34.84 .67	3.4 1.5	18.20 .35	42.6 2.0
Dec. 4.7	55.52 .36	25.9 1.5	54.10 .34	12.7 1.9	35.52 .67	2.3 0.8	18.55 .35	40.7 1.9
14.7	55.88 +.35	24.5 -1.3	54.44 +.33	10.8 -1.8	36.19 +.66	1.8 -0.2	18.91 +.35	38.9 -1.7
24.7	56.22 .35	23.3 1.0	54.77 .32	9.0 1.7	36.83 .62	1.8 +0.3	19.25 .33	37.3 1.5
34.6	56.53 +.29	22.4 -0.7	55.06 +.29	7.4 -1.5	37.43 +.57	2.4 +0.8	19.57 +.30	36.0 -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis. (H.)		ρ Leonis.		γ Argūs.		ι Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 10 26	° ' +76 14	h m 10 27	° ' + 9 50	h m 10 41	° ' -59 8	h m 10 43	° ' +11 5
	s	"	s	"	s	"	s	"
Jan. 0.7	21.63+ .98	38.2 +0.8	21.45 +.31	26.0 -1.8	2.28 +.46	1.5 -2.9	48.71 +.32	38.5 -1.7
10.6	22.56 .87	39.3 1.4	21.75 .28	24.3 1.6	2.71 .40	4.6 3.3	49.02 .29	36.8 1.6
20.6	23.38 .74	40.9 1.9	22.01 .24	22.9 1.3	3.08 .33	8.1 3.6	49.29 .25	35.4 1.3
30.6	24.04 .58	43.0 2.3	22.23 .19	21.7 1.1	3.38 .26	11.8 3.7	49.52 .21	34.2 1.0
Feb. 9.6	24.54 .41	45.5 2.6	22.40 .15	20.7 0.8	3.60 .18	15.5 3.8	49.71 .16	33.3 0.7
19.5	24.86+ .23	48.2 +2.8	22.52 +.11	20.1 -0.5	3.74 +.10	19.3 -3.8	49.85 +.11	32.7 -0.4
29.5	24.99+ .04	51.1 2.9	22.60 .05	19.7 -0.2	3.80 +.03	23.1 3.7	49.94 .07	32.4 -0.2
Mar. 10.5	24.94- .14	54.0 2.9	22.62 +.01	19.6 0.0	3.80 -0.04	26.7 3.5	49.99 +.02	32.3 0.0
20.4	24.71 .30	56.8 2.7	22.61 -0.03	19.7 +0.2	3.72 .11	30.1 3.2	49.99 -0.01	32.5 +0.2
30.4	24.33 .45	59.4 2.4	22.57 .06	19.9 0.3	3.58 .16	33.2 2.9	49.96 .05	32.8 0.4
Apr. 9.4	23.82- .57	61.7 +2.1	22.49 -0.08	20.3 +0.4	3.39 -0.21	35.9 -2.5	49.90 -0.07	33.3 +0.5
19.4	23.20 .66	63.6 1.6	22.40 .10	20.8 0.5	3.16 .25	38.2 2.1	49.82 .09	33.8 0.6
29.3	22.50 .72	65.0 1.1	22.29 .11	21.3 0.5	2.90 .28	40.2 1.7	49.72 .10	34.4 0.6
May 9.3	21.75 .75	65.9 0.7	22.18 .11	21.8 0.5	2.61 .30	41.6 1.2	49.61 .11	35.0 0.6
19.3	20.99 .76	66.3 +0.1	22.07 .11	22.4 0.5	2.31 .31	42.6 0.7	49.50 .11	35.6 0.6
29.3	20.23- .74	66.1 -0.5	21.96 -0.10	22.9 +0.5	2.00 -0.31	43.1 -0.2	49.39 -0.10	36.2 +0.6
June 8.2	19.51 .69	65.3 1.0	21.86 .09	23.4 0.5	1.69 .30	43.1 +0.3	49.30 .09	36.7 0.5
18.2	18.85 .63	64.1 1.5	21.78 .08	23.8 0.4	1.39 .29	42.5 0.8	49.21 .08	37.2 0.4
28.2	18.26 .54	62.3 1.9	21.71 .06	24.2 0.4	1.11 .27	41.5 1.2	49.13 .07	37.5 0.3
July 8.1	17.76 .45	60.2 2.4	21.66 .04	24.5 0.5	0.85 .24	40.1 1.7	49.07 .05	37.8 0.2
18.1	17.36- .34	57.6 -2.7	21.62 -0.02	24.8 +0.2	0.63 -0.20	38.2 +2.0	49.03 -0.03	38.0 +0.1
28.1	17.08 .22	54.7 3.0	21.61 .00	24.9 +0.1	0.45 .16	36.0 2.3	49.00 -0.01	38.1 0.0
Aug. 7.1	16.92- .10	51.5 3.3	21.62 +0.02	24.9 -0.1	0.31 .11	33.5 2.6	49.00 +0.01	37.9 -0.2
17.0	16.87+ .02	48.2 3.4	21.66 .05	24.7 0.2	0.24 -0.04	30.9 2.7	49.02 .03	37.7 0.3
27.0	16.96 .15	44.7 3.5	21.72 .08	24.4 0.4	0.22 +0.02	28.1 2.8	49.06 .06	37.3 0.5
Sept. 6.0	17.18+ .28	41.1 -3.6	21.81 +.11	23.9 -0.6	0.27 +.09	25.4 +2.7	49.14 +.09	36.7 -0.7
16.0	17.52 .41	37.5 3.6	21.94 .14	23.2 0.8	0.40 .16	22.7 2.5	49.24 .12	35.9 0.9
25.9	18.00 .54	33.9 3.5	22.09 .17	22.2 1.1	0.60 .24	20.3 2.2	49.38 .16	34.8 1.1
Oct. 5.9	18.60 .66	30.6 3.3	22.28 .21	21.1 1.3	0.88 .31	18.2 1.9	49.56 .19	33.6 1.4
15.9	19.32 .77	27.4 3.0	22.51 .24	19.7 1.5	1.22 .38	16.5 1.4	49.77 .23	32.1 1.6
25.8	20.14+ .87	24.5 -2.7	22.76 +.27	18.1 -1.7	1.63 +.44	15.4 +0.9	50.02 +.26	30.4 -1.8
Nov. 4.8	21.06 .96	22.0 2.3	23.05 .30	16.3 1.9	2.09 .48	14.8 +0.3	50.29 .29	28.6 1.9
14.8	22.06 1.03	19.9 1.8	23.36 .32	14.4 2.0	2.59 .51	14.8 -0.3	50.60 .32	26.6 2.0
24.8	23.12 1.07	18.3 1.3	23.69 .33	12.3 2.0	3.12 .53	15.5 1.0	50.93 .33	24.5 2.1
Dec. 4.7	24.20 1.08	17.3 0.8	24.03 .34	10.3 2.0	3.66 .54	16.7 1.6	51.27 .34	22.4 2.1
14.7	25.29+1.07	16.8 -0.2	24.37 +.34	8.2 -2.0	4.19 +.52	18.6 -2.1	51.61 +.34	20.3 -2.0
24.7	26.34 1.08	16.9 +0.3	24.71 .32	6.3 1.9	4.70 .48	21.0 2.6	51.95 .32	18.3 1.9
34.6	27.32+ .94	17.5 +0.9	25.01 +.30	4.5 -1.7	5.16 +.44	23.9 -3.0	52.27 +.31	16.5 -1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Majoris.		δ Leonis.		δ Crateris.		ϵ Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ^m 10 57	[°] ['] +62 18	^h ^m 11 8	[°] ['] +21 5	^h ^m 11 14	[°] ['] -14 12	^h ^m 11 22	[°] ['] + 3 25
	^s	["]	^s	["]	^s	["]	^s	["]
Jan. 0.7	21.37 +.38	27.1 -0.1	35.90 +.34	27.1 -1.5	9.28 +.33	55.4 -2.4	36.25 +.33	39.9 -2.1
10.7	21.92 .33	27.3 +0.5	36.23 .32	25.6 1.3	9.60 .30	57.9 2.5	36.57 .31	37.9 2.0
20.6	22.43 .47	28.1 1.0	36.54 .28	24.5 0.9	9.89 .27	60.4 2.4	36.86 .27	36.0 1.8
30.6	22.86 .39	29.4 1.5	36.80 .24	23.8 0.6	10.13 .23	62.8 2.3	37.12 .24	34.4 1.5
Feb. 9.6	23.21 .30	31.2 1.9	37.02 .19	23.4 -0.2	10.34 .19	65.0 2.2	37.34 .19	33.0 1.3
19.5	23.46 +.21	33.3 +2.3	37.19 +.15	23.3 +0.1	10.50 +.14	67.1 -2.0	37.51 +.15	31.9 -1.0
29.5	23.63 .11	35.7 2.5	37.31 .10	23.6 0.4	10.62 .09	69.0 1.7	37.64 .11	31.0 0.7
Mar. 10.5	23.69 +.02	38.2 2.6	37.38 .05	24.1 0.6	10.69 .05	70.6 1.5	37.72 .06	30.5 0.4
20.5	23.66 -.07	40.8 2.6	37.41 +.01	24.8 0.8	10.72 +.01	72.0 1.3	37.76 +.02	30.2 -0.2
30.4	23.55 .15	43.4 2.4	37.40 -.03	25.7 0.9	10.72 -.02	73.1 1.0	37.77 -.01	30.1 0.0
Apr. 9.4	23.37 -.21	45.7 +2.2	37.35 -.06	26.7 +1.0	10.68 -.05	73.9 -0.7	37.74 -.03	30.2 +0.2
19.4	23.12 .27	47.8 1.9	37.28 .08	27.7 1.0	10.62 .07	74.6 0.5	37.69 .06	30.4 0.3
29.4	22.84 .30	49.6 1.6	37.19 .10	28.7 1.0	10.55 .08	75.0 0.3	37.63 .08	30.8 0.4
May 9.3	22.52 .33	50.9 1.1	37.09 .11	29.7 0.9	10.46 .09	75.1 -0.1	37.54 .09	31.3 0.5
19.3	22.18 .34	51.8 0.7	36.97 .11	30.5 0.8	10.36 .10	75.1 +0.1	37.45 .09	31.8 0.5
29.3	21.84 -.34	52.3 +0.2	36.86 -.11	31.2 +0.6	10.26 -.10	74.8 +0.3	37.36 -.09	32.3 +0.6
June 8.3	21.51 .32	52.2 -0.3	36.75 .11	31.8 0.5	10.15 .10	74.4 0.5	37.26 .09	32.9 0.6
18.2	21.20 .30	51.7 0.8	36.65 .10	32.2 0.3	10.05 .10	73.8 0.7	37.17 .09	33.5 0.6
28.2	20.92 .27	50.7 1.2	36.55 .09	32.4 +0.1	9.96 .09	73.0 0.8	37.08 .08	34.0 0.5
July 8.2	20.67 .23	49.2 1.6	36.47 .07	32.4 -0.1	9.87 .08	72.1 0.9	37.00 .07	34.6 0.5
18.1	20.46 -.18	47.4 -2.0	36.40 -.06	32.2 -0.3	9.80 -.07	71.2 +1.0	36.94 -.06	35.0 +0.4
28.1	20.30 .13	45.2 2.4	36.36 .04	31.8 0.5	9.74 .05	70.1 1.1	36.88 .04	35.4 0.3
Aug. 7.1	20.19 .08	42.6 2.7	36.33 -.02	31.2 0.7	9.71 -.03	69.0 1.1	36.85 -.02	35.7 0.2
17.1	20.14 -.02	39.8 2.9	36.33 +.01	30.4 0.9	9.70 .00	68.0 1.0	36.83 .00	35.8 +0.1
27.0	20.15 +.04	36.7 3.1	36.35 .04	29.4 1.1	9.70 +.02	67.0 0.9	36.84 +.02	35.8 -0.1
Sept. 6.0	20.21 +.10	33.5 -3.3	36.40 +.07	28.2 -1.3	9.74 +.06	66.1 +0.8	36.87 +.05	35.7 -0.3
16.0	20.35 .17	30.2 3.4	36.48 .10	26.8 1.5	9.81 .09	65.5 0.6	36.94 .08	35.3 0.5
26.0	20.55 .24	26.8 3.4	36.60 .14	25.2 1.7	9.92 .13	65.0 +0.3	37.04 .12	34.7 0.7
Oct. 5.9	20.82 .30	23.4 3.3	36.76 .18	23.3 1.9	10.06 .17	64.9 0.0	37.18 .16	33.8 1.0
15.9	21.16 .37	20.1 3.2	36.95 .21	21.3 2.1	10.25 .21	65.0 -0.3	37.35 .20	32.7 1.2
25.9	21.56 +.43	17.0 -3.0	37.18 +.25	19.2 -2.2	10.48 +.25	65.5 -0.7	37.57 +.23	31.3 -1.5
Nov. 4.8	22.03 .49	14.1 2.7	37.46 .29	16.9 2.3	10.74 .28	66.4 1.1	37.82 .27	29.7 1.7
14.8	22.55 .54	11.5 2.4	37.76 .32	14.6 2.3	11.04 .31	67.7 1.4	38.10 .30	27.8 1.9
24.8	23.11 .58	9.3 1.9	38.09 .34	12.4 2.3	11.36 .33	69.2 1.7	38.41 .32	25.8 2.1
Dec. 4.8	23.70 .60	7.6 1.5	38.43 .35	10.1 2.2	11.70 .34	71.1 2.0	38.74 .33	23.7 2.2
14.7	24.30 +.60	6.3 -1.0	38.79 +.36	8.0 -2.0	12.04 +.34	73.3 -2.2	39.08 +.34	21.5 -2.2
24.7	24.90 .59	5.6 -0.4	39.15 .35	6.2 1.8	12.39 .34	75.6 2.4	39.42 .33	19.3 2.2
34.7	25.48 +.58	5.5 +0.1	39.49 +.34	4.5 -1.5	12.72 +.32	78.0 -2.5	39.75 +.32	17.2 -2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Draconis.		ν Leonis.		β Leonis.		γ Ursae Majoris.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 11 25	° ' +69 53	h m 11 31	° ' — 0 15	h m 11 43	° ' +15 8	h m 11 48	° ' +54 15
	s	"	s	"	s	"	s	"
Jan. 0.7	16.89 +.76	57.8 —0.2	38.26 +.33	2.1 —2.2	46.24 +.34	63.2 —1.9	23.44 +.50	62.8 —1.0
10.7	17.63 .71	57.9 +0.4	38.59 .31	4.2 2.1	46.57 .32	61.4 1.7	23.93 .47	62.1 —0.4
20.7	18.31 .64	58.6 1.0	38.88 .28	6.2 1.9	46.88 .29	59.9 1.4	24.39 .44	62.0 +0.2
30.6	18.91 .55	59.9 1.6	39.15 .24	8.1 1.7	47.16 .26	58.7 1.0	24.80 .38	62.6 0.8
Feb. 9.6	19.41 .45	61.8 2.0	39.37 .20	9.6 1.5	47.41 .22	57.8 0.7	25.16 .32	63.6 1.3
19.6	19.80 +.33	64.0 +2.4	39.55 +.16	11.0 —1.2	47.60 +.18	57.4 —0.3	25.45 +.26	65.1 +1.7
29.5	20.07 .20	66.5 2.7	39.68 .11	12.0 0.9	47.75 .13	57.2 0.0	25.67 .18	66.9 2.0
Mar. 10.5	20.21 +.08	69.3 2.8	39.78 .07	12.8 0.7	47.86 .08	57.3 +0.3	25.81 .11	69.1 2.3
20.5	20.22 —.04	72.1 2.8	39.83 +.03	13.4 0.4	47.93 .04	57.7 0.5	25.88 +.04	71.5 2.4
30.5	20.12 .16	74.9 2.7	39.84 .00	13.7 —0.2	47.95 +.01	58.3 0.7	25.89 —.03	74.0 2.5
Apr. 9.4	19.91 —.26	77.6 +2.5	39.83 —.03	13.8 0.0	47.94 —.02	59.1 +0.8	25.83 —.09	76.4 +2.4
19.4	19.61 .34	80.0 2.2	39.79 .05	13.7 +0.1	47.90 .05	60.0 0.9	25.71 .14	78.8 2.2
29.4	19.23 .40	82.1 1.8	39.72 .07	13.5 0.3	47.84 .07	60.9 0.9	25.55 .18	80.9 2.0
May 9.3	18.80 .45	83.7 1.4	39.65 .08	13.2 0.4	47.76 .09	61.8 0.9	25.36 .21	82.7 1.7
19.3	18.33 .48	84.9 0.9	39.56 .09	12.7 0.5	47.67 .09	62.7 0.8	25.14 .23	84.2 1.3
29.3	17.83 —.49	85.6 +0.4	39.47 —.09	12.2 +0.5	47.57 .10	63.5 +0.8	24.90 —.24	85.3 +0.9
June 8.3	17.34 .49	85.7 —0.1	39.38 .09	11.7 0.6	47.47 .10	64.2 0.7	24.65 .24	86.0 +0.4
18.2	16.85 .47	85.4 0.6	39.28 .09	11.1 0.6	47.37 .10	64.8 0.5	24.41 .24	86.2 0.0
28.2	16.40 .44	84.5 1.1	39.20 .09	10.5 0.6	47.27 .09	65.2 0.3	24.17 .23	86.0 —0.5
July 8.2	15.97 .40	83.1 1.6	39.11 .08	9.9 0.6	47.18 .09	65.5 +0.2	23.95 .21	85.3 0.9
18.2	15.60 —.35	81.3 —2.1	39.04 —.07	9.4 +0.5	47.10 —.08	65.6 0.0	23.75 —.19	84.1 —1.3
28.1	15.28 .29	79.0 2.5	38.98 .05	8.8 0.5	47.03 .06	65.6 —0.1	23.58 .16	82.6 1.7
Aug. 7.1	15.03 .22	76.4 2.8	38.94 .03	8.4 0.4	46.97 .04	65.3 0.3	23.43 .13	80.7 2.1
17.1	14.85 .14	73.4 3.1	38.91 —.01	8.1 0.3	46.94 —.02	64.9 0.5	23.32 .09	78.4 2.4
27.0	14.75 —.06	70.1 3.3	38.91 +.01	7.9 +0.1	46.92 .00	64.2 0.8	23.25 —.05	75.9 2.7
Sept. 6.0	14.73 +.03	66.7 —3.5	38.94 +.04	7.8 —0.1	46.93 +.03	63.3 —1.0	23.22 .00	73.0 —3.0
16.0	14.80 .11	63.1 3.6	38.99 .07	8.0 0.3	46.98 .06	62.3 1.2	23.25 +.05	69.9 3.2
26.0	14.96 .21	59.5 3.7	39.09 .11	8.4 0.5	47.06 .10	60.9 1.4	23.32 .11	66.7 3.3
Oct. 5.9	15.21 .30	55.8 3.6	39.21 .15	9.0 0.8	47.17 .14	59.4 1.7	23.46 .17	63.3 3.4
15.9	15.56 .40	52.2 3.5	39.38 .19	10.0 1.1	47.33 .18	57.6 1.9	23.65 .23	60.0 3.4
25.9	16.01 +.49	48.8 —3.3	39.59 +.21	11.2 —1.3	47.52 +.22	55.7 —2.0	23.91 +.29	56.6 —3.3
Nov. 4.9	16.54 .57	45.6 3.0	39.83 .26	12.6 1.6	47.76 .25	53.6 2.2	24.23 .34	53.3 3.2
14.8	17.15 .64	42.8 2.7	40.11 .30	14.3 1.8	48.03 .29	51.3 2.3	24.60 .39	50.3 2.9
24.8	17.83 .70	40.3 2.2	40.42 .32	16.2 2.0	48.33 .32	49.0 2.3	25.02 .43	47.5 2.6
Dec. 4.8	18.55 .74	38.3 1.7	40.74 .33	18.3 2.1	48.66 .34	46.7 2.3	25.48 .47	45.0 2.2
14.8	19.31 +.77	36.9 —1.2	41.08 +.34	20.5 —2.2	49.00 +.35	44.4 —2.2	25.96 +.49	43.0 —1.8
24.7	20.08 .76	36.0 —0.6	41.42 .34	22.7 2.2	49.35 .35	42.3 2.0	26.46 .50	41.4 1.3
34.7	20.84 +.75	35.8 0.0	41.75 +.32	25.0 —2.2	49.69 +.34	40.3 —1.8	26.95 +.49	40.4 —0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♍ Virginis.		♠ Draconis (H.)		♎ Corvi.		♏ Chamæleonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 11 59	° ' + 9 18	h m 12 7	° ' + 78 10	h m 12 10	° ' - 16 57	h m 12 12	° ' - 78 43
	s	"	s	"	s	"	s	"
Jan. 0.7	55.45 +.34	30.4 -2.1	23.92 +1.20	75.6 -0.5	27.91 +.35	51.1 -2.3	13.38 +1.24	48.1 -1.4
10.7	55.78 .32	28.4 1.9	25.10 1.16	75.4 +0.1	28.25 .33	53.4 2.4	14.60 1.17	49.9 2.1
20.7	56.09 .30	26.7 1.6	26.23 1.09	75.9 0.8	28.57 .31	55.8 2.4	15.73 1.07	52.3 2.6
30.6	56.38 .27	25.2 1.3	27.27 .98	77.0 1.4	28.87 .28	58.2 2.3	16.74 .95	55.2 3.0
Feb. 9.6	56.63 .23	24.1 1.0	28.18 .83	78.6 1.9	29.13 .24	60.5 2.2	17.62 .80	58.4 3.4
19.6	56.84 +.19	23.2 -0.7	28.93 +.66	80.8 +2.4	29.34 +.20	62.6 -2.1	18.35 +.64	61.9 -3.6
29.6	57.00 .14	22.7 0.4	29.50 .47	83.3 2.7	29.52 .15	64.6 1.9	18.90 .47	65.6 3.8
Mar. 10.5	57.12 .10	22.5 -0.1	29.87 .27	86.2 2.9	29.65 .11	66.4 1.7	19.29 .30	69.5 3.9
20.5	57.20 .06	22.5 +0.2	30.04 +.07	89.1 3.1	29.74 .07	67.9 1.4	19.51 +.13	73.4 3.9
30.5	57.24 +.03	22.8 0.4	30.01 - .13	92.2 3.0	29.80 .04	69.2 1.2	19.55 - .03	77.2 3.8
Apr. 9.5	57.25 - .01	23.3 +0.5	29.78 - .32	95.1 +2.8	29.82 +.01	70.3 -1.0	19.44 - .19	80.9 -3.6
19.4	57.23 .03	23.9 0.7	29.37 .48	97.9 2.6	29.82 - .02	71.1 0.7	19.17 .34	84.5 3.4
29.4	57.19 .05	24.6 0.7	28.81 .62	100.3 2.3	29.78 .04	71.7 0.5	18.76 .48	87.7 3.1
May 9.4	57.13 .07	25.3 0.8	28.12 .74	102.4 1.8	29.73 .06	72.2 0.3	18.22 .60	90.6 2.7
19.3	57.05 .08	26.1 0.8	27.33 .83	104.0 1.3	29.66 .07	72.3 -0.1	17.57 .70	93.1 2.3
29.3	56.96 - .09	26.8 +0.7	26.47 - .88	105.1 +0.8	29.58 - .08	72.3 +0.1	16.81 - .79	95.1 -1.8
June 8.3	56.87 .09	27.5 0.7	25.57 .91	105.6 +0.3	29.49 .09	72.1 0.3	15.98 .86	96.7 1.3
18.3	56.78 .09	28.2 0.6	24.64 .92	105.6 -0.3	29.40 .10	71.7 0.5	15.09 .91	97.7 0.8
28.2	56.68 .09	28.7 0.5	23.73 .90	105.1 0.8	29.30 .10	71.2 0.6	14.17 .93	98.2 -0.2
July 8.2	56.59 .09	29.2 0.4	22.85 .85	104.0 1.4	29.20 .10	70.5 0.7	13.23 .92	98.1 +0.3
18.2	56.51 - .08	29.5 +0.3	22.03 - .79	102.4 -1.8	29.10 - .09	69.7 +0.8	12.32 - .89	97.5 +0.9
28.2	56.43 .07	29.7 +0.1	21.27 .71	100.3 2.3	29.01 .08	68.8 0.9	11.46 .82	96.4 1.4
Aug. 7.1	56.37 .06	29.7 -0.1	20.61 .61	97.8 2.7	28.93 .07	67.8 1.0	10.67 .73	94.7 1.9
17.1	56.32 .04	29.6 0.2	20.06 .49	94.9 3.1	28.87 .05	66.8 1.0	10.00 .61	92.6 2.3
27.1	56.29 - .02	29.3 0.4	19.63 .37	91.6 3.4	28.82 - .03	65.8 1.0	9.46 .46	90.2 2.6
Sept. 6.0	56.29 +.01	28.8 -0.6	19.33 - .23	88.2 -3.6	28.81 .00	64.9 +0.9	9.08 - .28	87.4 +2.8
16.0	56.32 .04	28.0 0.9	19.17 - .08	84.5 3.8	28.82 +.03	64.1 0.7	8.89 - .09	84.5 2.9
26.0	56.38 .08	27.0 1.1	19.16 +.07	80.6 3.9	28.88 .07	63.5 0.5	8.90 +.11	81.5 3.0
Oct. 6.0	56.48 .12	25.8 1.3	19.32 .24	76.8 3.9	28.97 .11	63.1 +0.2	9.12 .32	78.6 2.8
15.9	56.62 .16	24.4 1.6	19.64 .40	72.9 3.8	29.10 .16	63.0 -0.1	9.55 .53	75.8 2.6
25.9	56.80 +.20	22.7 -1.8	20.11 +.56	69.2 -3.6	29.28 +.20	63.2 -0.4	10.18 +.73	73.3 +2.3
Nov. 4.9	57.02 .24	20.8 2.0	20.75 .72	65.7 3.4	29.51 .24	63.8 0.7	11.00 .90	71.2 1.9
14.8	57.28 .28	18.8 2.1	21.54 .86	62.5 3.0	29.77 .28	64.7 1.1	11.99 1.05	69.6 1.3
24.8	57.57 .31	16.6 2.2	22.47 .98	59.6 2.6	30.07 .31	66.0 1.4	13.11 1.17	68.5 0.8
Dec. 4.8	57.89 .33	14.3 2.3	23.51 1.08	57.3 2.1	30.40 .34	67.6 1.7	14.32 1.24	68.1 +0.1
14.8	58.22 +.34	12.0 -2.2	24.63 +1.15	55.4 -1.6	30.75 +.35	69.4 -2.0	15.59 +1.28	68.3 -0.5
24.7	58.56 .34	9.8 2.1	25.80 1.18	54.2 0.9	31.10 .35	71.5 2.2	16.88 1.27	69.1 1.1
34.7	58.91 +.33	7.8 -2.0	26.99 +1.20	53.6 -0.3	31.45 +.34	73.8 -2.3	18.14 +1.23	70.5 -1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Virginis.		α^1 Crucis.		β Corvi.		κ Draconis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 12 14	° ' — 0 5	h m 12 20	° ' — 62 31	h m 12 28	° ' — 22 49	h m 12 29	° ' + 70 20
Jan. 0.7	35.70 +.34	25.0 -2.2	48.51 +.60	8.0 -1.7	55.70 +.36	15.4 -2.2	4.78 +.77	77.6 -1.1
10.7	36.03 .33	27.2 2.1	49.10 .57	10.0 2.2	56.06 .35	17.6 2.3	5.54 .75	76.9 -0.4
20.7	36.35 .30	29.2 1.9	49.66 .53	12.5 2.7	56.40 .33	20.0 2.4	6.28 .72	76.8 +0.3
30.7	36.64 .27	31.1 1.7	50.16 .47	15.4 3.0	56.71 .30	22.5 2.4	6.98 .66	77.4 0.9
Feb. 9.6	36.90 .24	32.7 1.5	50.60 .41	18.6 3.3	56.99 .26	24.9 2.4	7.60 .58	78.6 1.5
19.6	37.11 +.20	34.0 -1.2	50.98 +.34	22.0 -3.5	57.23 +.22	27.2 -2.3	8.14 +.48	80.3 +2.0
29.6	37.29 .16	35.1 0.9	51.28 .26	25.5 3.6	57.42 .18	29.5 2.2	8.56 .37	82.6 2.4
Mar. 10.5	37.43 .12	35.9 0.7	51.50 .19	29.1 3.6	57.58 .14	31.5 2.0	8.87 .24	85.1 2.7
20.5	37.52 .08	36.4 0.4	51.65 .11	32.7 3.5	57.70 .10	33.4 1.8	9.05 +.12	87.9 2.9
30.5	37.58 .04	36.7 -0.2	51.73 +.04	36.2 3.4	57.78 .06	35.0 1.5	9.12 .00	90.9 2.9
Apr. 9.5	37.61 +.01	36.8 0.0	51.74 -0.2	39.5 -3.2	57.82 +.03	36.5 -1.3	9.06 -0.11	93.8 +2.9
19.4	37.60 -0.2	36.7 +0.2	51.68 .08	42.5 2.9	57.83 .00	37.6 1.1	8.90 .21	96.6 2.7
29.4	37.57 .04	36.4 0.3	51.57 .14	45.3 2.6	57.81 -0.3	38.6 0.8	8.63 .30	99.2 2.4
May 9.4	37.53 .05	36.0 0.4	51.41 .19	47.8 2.3	57.78 .05	39.3 0.6	8.29 .38	101.5 2.1
19.4	37.47 .07	35.5 0.5	51.20 .23	49.9 1.9	57.72 .07	39.8 0.4	7.88 .44	103.5 1.7
29.3	37.39 -0.8	35.0 +0.5	50.95 -0.26	51.5 -1.4	57.64 -0.8	40.0 -0.1	7.42 -0.49	104.9 +1.2
June 8.3	37.31 .09	34.4 0.6	50.67 .29	52.7 1.0	57.56 .09	40.0 +0.1	6.92 .51	105.9 0.7
18.3	37.22 .09	33.8 0.6	50.36 .31	53.4 -0.5	57.46 .10	39.8 0.3	6.41 .52	106.3 +0.2
28.2	37.13 .09	33.3 0.6	50.04 .32	53.6 0.0	57.35 .11	39.5 0.5	5.88 .52	106.2 -0.3
July 8.2	37.04 .09	32.7 0.6	49.71 .33	53.4 +0.5	57.24 .11	38.9 0.7	5.37 .50	105.6 0.9
18.2	36.95 -0.9	32.1 +0.5	49.39 -0.32	52.6 +1.0	57.14 -0.11	38.1 +0.9	4.88 -0.48	104.5 -1.4
28.2	36.86 .08	31.7 0.4	49.08 .30	51.4 1.4	57.03 .10	37.1 1.0	4.42 .44	102.9 1.9
Aug. 7.1	36.79 .06	31.3 0.4	48.79 .27	49.8 1.8	56.93 .09	36.1 1.1	4.00 .39	100.8 2.5
17.1	36.74 .05	30.9 0.2	48.55 .22	47.8 2.1	56.85 .07	34.9 1.2	3.64 .33	98.3 2.7
27.1	36.70 -0.3	30.8 +0.1	48.35 .16	45.5 2.4	56.79 .05	33.8 1.2	3.34 .26	95.4 3.0
Sept. 6.1	36.68 .00	30.7 -0.1	48.22 -0.9	43.0 +2.6	56.75 -0.2	32.6 +1.1	3.12 -0.18	92.2 -3.3
16.0	36.69 +0.3	30.9 0.3	48.16 -0.2	40.3 2.7	56.74 +0.1	31.5 1.0	2.98 -0.10	88.7 3.6
26.0	36.74 .07	31.3 0.5	48.18 +0.7	37.7 2.6	56.78 .05	30.6 0.8	2.93 .00	85.1 3.7
Oct. 6.0	36.83 .11	32.0 0.8	48.29 .16	35.1 2.5	56.85 .10	29.9 0.6	2.98 +0.10	81.3 3.8
15.9	36.95 .15	32.9 1.0	48.50 .25	32.7 2.2	56.97 .15	29.4 +0.3	3.13 .20	77.5 3.8
25.9	37.12 +0.19	34.0 -1.3	48.79 +0.34	30.7 +1.9	57.14 +0.19	29.2 0.0	3.38 +0.31	73.7 -3.7
Nov. 4.9	37.33 .23	35.5 1.5	49.17 .42	29.0 1.4	57.36 .24	29.4 -0.4	3.74 .41	70.0 3.5
14.9	37.58 .27	37.1 1.8	49.63 .49	27.8 0.9	57.62 .28	29.9 0.7	4.20 .51	66.6 3.3
24.8	37.87 .30	39.0 2.0	50.15 .55	27.2 +0.4	57.92 .31	30.8 1.1	4.76 .59	63.4 2.9
Dec. 4.8	38.18 .32	41.1 2.1	50.72 .59	27.1 -0.2	58.25 .34	32.1 1.5	5.39 .67	60.7 2.5
14.8	38.51 +0.34	43.3 -2.2	51.33 +0.60	27.7 -0.8	58.60 +0.36	33.8 -1.8	6.09 +0.72	58.5 -2.0
24.8	38.85 .34	45.5 2.2	51.94 .60	28.8 1.4	58.96 .36	35.7 2.0	6.83 .75	56.8 1.4
34.7	39.19 +0.34	47.7 -2.2	52.54 +0.60	30.5 -1.9	59.33 +0.36	37.8 -2.2	7.60 +0.76	55.7 -0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	32 ^d Camelop. (H.)		α Can. Venaticorum.		θ Virginis.		α Virginis. (Spica.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 12 48	° ' " +83 57	h m 12 51	° ' " +38 52	h m 13 4	° ' " - 4 59	h m 13 19	° ' " -10 37
Jan. 0.8	26.26+2.17	76.3 -0.9	10.58 +.40	29.4 -1.9	34.11 +.34	6.5 -2.2	42.91 +.34	9.9 -2.0
10.7	28.44 2.16	75.7 -0.2	10.98 .39	27.7 1.4	34.45 .34	8.6 2.1	43.26 .34	12.0 2.1
20.7	30.59 2.10	75.7 +0.4	11.36 .37	26.5 0.9	34.79 .32	10.7 2.0	43.60 .33	14.0 2.1
30.7	32.65 1.97	76.4 1.0	11.73 .35	25.8 -0.4	35.10 .30	12.7 1.9	43.92 .31	16.1 2.0
Feb. 9.6	34.53 1.76	77.7 1.6	12.06 .31	25.7 +0.1	35.39 .27	14.4 1.7	44.22 .28	18.0 1.9
19.6	36.16+1.48	79.6 +2.1	12.36 +.27	26.1 +0.6	35.65 +.24	16.0 -1.4	44.49 +.25	19.7 -1.7
29.6	37.49 1.16	82.0 2.5	12.60 .22	27.0 1.1	35.87 .20	17.3 1.2	44.73 .22	21.3 1.5
Mar. 10.6	38.47 .79	84.7 2.8	12.80 .17	28.3 1.5	36.05 .17	18.4 0.9	44.93 .19	22.6 1.2
20.5	39.07 .41	87.6 3.0	12.94 .12	29.9 1.8	36.20 .13	19.2 0.7	45.09 .15	23.7 1.0
30.5	39.29+ .02	90.7 3.1	13.04 .07	31.8 2.0	36.31 .09	19.7 0.4	45.22 .11	24.5 0.8
Apr. 9.5	39.12- .36	93.8 +3.0	13.09 +.03	33.9 +2.1	36.38 +.06	20.0 -0.2	45.31 +.08	25.2 -0.6
19.5	38.58 .72	96.7 2.8	13.09 -0.2	36.0 2.1	36.43 .03	20.2 0.0	45.38 .05	25.7 0.4
29.4	37.69 1.04	99.4 2.6	13.05 .05	38.1 2.1	36.45 +.01	20.1 +0.1	45.41 +.02	25.9 -0.2
May 9.4	36.50 1.32	101.8 2.2	12.99 .08	40.1 1.9	36.45 -0.2	19.9 0.3	45.42 .00	26.0 0.0
19.4	35.05 1.55	103.8 1.7	12.89 .11	42.0 1.7	36.42 .04	19.6 0.4	45.41 -0.2	26.0 +0.1
29.4	33.39-1.73	105.3 +1.3	12.77 -0.13	43.6 +1.5	36.38 -0.05	19.2 +0.5	45.38 -0.4	25.8 +0.2
June 8.3	31.58 1.86	106.3 0.7	12.63 .14	44.9 1.2	36.31 .07	18.7 0.5	45.32 .06	25.5 0.3
18.3	29.68 1.93	106.8 +0.2	12.48 .15	45.9 0.8	36.24 .08	18.2 0.5	45.25 .07	25.1 0.4
28.2	27.72 1.95	106.7 -0.4	12.33 .16	46.6 0.5	36.15 .09	17.6 0.6	45.17 .09	24.7 0.5
July 8.2	25.77 1.92	106.0 0.9	12.17 .16	46.8 +0.1	36.06 .10	17.0 0.6	45.08 .10	24.1 0.5
18.2	23.88-1.85	104.8 -1.5	12.00 -0.16	46.7 -0.3	35.96 -0.10	16.5 +0.6	44.97 -0.10	23.6 +0.6
28.2	22.08 1.73	103.0 2.0	11.85 .15	46.2 0.7	35.86 .10	15.9 0.5	44.87 .11	22.9 0.6
Aug. 7.2	20.41 1.58	100.9 2.4	11.70 .14	45.4 1.0	35.76 .10	15.4 0.5	44.76 .10	22.3 0.6
17.1	18.91 1.39	98.2 2.8	11.57 .12	44.1 1.4	35.67 .09	14.9 0.4	44.66 .09	21.7 0.6
27.1	17.62 1.17	95.2 3.2	11.46 .10	42.5 1.8	35.59 .07	14.5 0.3	44.57 .08	21.1 0.5
Sept. 6.1	16.57- .92	91.9 -3.5	11.38 -0.07	40.6 -2.1	35.53 -0.05	14.3 +0.2	44.50 -0.06	20.6 +0.4
16.1	15.78 .65	88.3 3.7	11.33 -0.03	38.4 2.4	35.50 -0.02	14.2 0.0	44.45 -0.03	20.3 0.3
26.0	15.27 .36	84.5 3.8	11.31 +.01	35.9 2.6	35.50 +.02	14.3 -0.2	44.43 .00	20.0 +0.1
Oct. 6.0	15.06- .05	80.6 3.9	11.35 .06	33.1 2.9	35.53 .06	14.6 0.4	44.45 +0.4	20.0 -0.1
16.0	15.17+ .27	76.7 3.9	11.42 .11	30.2 3.0	35.61 .10	15.1 0.7	44.52 .09	20.2 0.5
25.9	15.61+ .60	72.8 -3.8	11.56 +.16	27.1 -3.1	35.73 +.15	15.9 -0.9	44.63 +.13	20.6 -0.6
Nov. 4.9	16.37 .92	69.1 3.6	11.74 .21	23.9 3.2	35.90 .19	17.0 1.2	44.79 .18	21.3 0.8
14.9	17.45 1.23	65.6 3.6	11.98 .26	20.7 3.1	36.11 .23	18.4 1.5	44.99 .22	22.3 1.1
24.9	18.83 1.51	62.5 2.9	12.26 .31	17.6 3.0	36.37 .27	19.9 1.7	45.24 .26	23.6 1.4
Dec. 4.8	20.47 1.75	59.8 2.5	12.59 .34	14.7 2.8	36.65 .30	21.7 1.9	45.52 .30	25.1 1.7
14.8	22.34+1.95	57.5 -1.9	12.95 +.37	12.0 -2.5	36.97 +.33	23.7 -2.0	45.84 +.32	26.9 -1.9
24.8	24.37 2.08	55.9 1.3	13.33 .39	9.6 2.2	37.31 .34	25.8 2.1	46.17 .34	28.8 2.0
34.8	26.51+2.17	54.9 -0.7	13.73 +.40	7.7 -1.8	37.65 +.34	27.9 -2.2	46.52 +.35	30.8 -2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Virginis.		γ Ursæ Majoris.		η Bootis.		β Centauri.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 13 29	° ' " — 0 3	h m 13 43	° ' " +49 49	h m 13 49	° ' " +18 54	h m 13 56	° ' " —59 52
Jan. 0.8	23.75 +.34	58.1 —2.2	26.96 +.43	34.0 —2.2	44.12 +.34	54.7 —2.4	27.66 +.58	7.3 —0.5
10.8	24.08 .34	60.3 2.1	27.40 .44	32.0 1.7	44.46 .34	52.5 2.1	28.24 .59	8.1 1.0
20.7	24.42 .33	62.3 1.9	27.84 .44	30.6 1.1	44.80 .34	50.6 1.7	28.83 .58	9.3 1.5
30.7	24.74 .31	64.1 1.7	28.27 .42	29.7 —0.5	45.14 .33	49.0 1.3	29.40 .56	11.1 1.9
Feb. 9.7	25.04 .29	65.7 1.5	28.69 .40	29.5 +0.1	45.45 .31	47.9 0.9	29.95 .52	13.2 2.3
19.7	25.31 +.26	67.1 —1.2	29.07 +.36	29.9 +0.7	45.75 +.28	47.2 —0.5	30.45 +.48	15.6 —2.6
29.6	25.55 .22	68.1 0.9	29.40 .31	30.8 1.2	46.01 .24	46.9 —0.1	30.91 .43	18.3 2.8
Mar. 10.6	25.75 .19	68.9 0.6	29.69 .26	32.3 1.6	46.23 .21	47.0 +0.3	31.31 .37	21.2 2.9
20.6	25.92 .15	69.4 0.4	29.92 .20	34.2 2.1	46.42 .17	47.5 0.7	31.65 .31	24.2 3.0
30.5	26.06 .12	69.6 —0.1	30.09 .14	36.5 2.4	46.57 .13	48.3 1.0	31.94 .25	27.2 3.1
Apr. 9.5	26.16 +.08	69.6 +0.1	30.20 +.09	39.0 +2.6	46.69 +.10	49.4 +1.2	32.16 +.19	30.3 —3.0
19.5	26.22 .05	69.4 0.3	30.26 +.03	41.6 2.7	46.77 .07	50.7 1.4	32.33 .13	33.3 2.9
29.5	26.26 +.03	69.0 0.4	30.26 —.02	44.3 2.6	46.82 +.03	52.2 1.5	32.43 .07	36.1 2.8
May 9.4	26.28 .00	68.5 0.5	30.22 .07	46.9 2.5	46.84 .00	53.7 1.5	32.47 +.02	38.8 2.6
19.4	26.27 —.01	67.9 0.6	30.13 .11	49.3 2.3	46.83 —.02	55.2 1.5	32.46 —.03	41.3 2.3
June 29.4	26.24 —.04	67.3 +0.7	30.00 —.14	51.5 +2.0	46.80 —.04	56.7 +1.4	32.39 —.09	43.5 —2.1
8.4	26.19 .06	66.6 0.7	29.85 .17	53.4 1.7	46.74 .06	58.0 1.3	32.27 .14	45.4 1.8
18.3	26.13 .07	65.9 0.7	29.66 .20	54.9 1.3	46.67 .08	59.2 1.1	32.11 .19	47.0 1.4
28.3	26.05 .09	65.3 0.6	29.45 .22	56.0 0.9	46.58 .10	60.3 0.9	31.89 .23	48.1 0.9
July 8.3	25.95 .10	64.7 0.6	29.22 .23	56.7 +0.4	46.47 .11	61.1 0.7	31.65 .26	48.8 0.5
18.2	25.85 —.10	64.1 +0.5	28.99 —.24	56.9 0.0	46.35 —.12	61.6 +0.4	31.37 —.29	49.1 —0.1
28.2	25.74 .11	63.6 0.4	28.75 .24	56.7 —0.5	46.22 .13	62.0 +0.2	31.07 .30	49.0 +0.4
Aug. 7.2	25.64 .11	63.2 0.4	28.51 .23	56.0 0.9	46.09 .13	62.0 —0.1	30.77 .30	48.4 0.8
17.2	25.53 .10	62.9 0.2	28.28 .22	54.8 1.4	45.97 .12	61.8 0.3	30.47 .29	47.3 1.2
27.1	25.43 .09	62.7 +0.1	28.07 .20	53.2 1.8	45.85 .11	61.3 0.6	30.19 .26	45.9 1.6
Sept. 6.1	25.36 —.07	62.7 —0.1	27.88 —.17	51.3 —2.2	45.74 —.09	60.5 —0.9	29.95 —.22	44.1 +1.8
16.1	25.30 .04	62.9 0.3	27.73 .13	48.9 2.6	45.66 .07	59.5 1.2	29.75 .17	42.0 2.2
26.1	25.27 —.01	63.2 0.5	27.61 .09	46.1 2.9	45.60 —.04	58.2 1.5	29.61 .10	39.7 2.3
Oct. 6.0	25.28 +.03	63.8 0.7	27.55 —.04	43.1 3.2	45.58 .00	56.5 1.8	29.55 —.08	37.4 2.4
16.0	25.33 .07	64.6 0.9	27.54 +.02	39.8 3.4	45.60 +.04	54.6 2.0	29.57 +.06	35.0 2.4
Nov. 26.0	25.43 +.12	65.7 —1.2	27.59 +.06	36.4 —3.5	45.67 +.09	52.5 —2.2	29.68 +.15	32.6 +2.3
4.9	25.57 .16	67.0 1.4	27.70 .15	32.8 3.6	45.78 .14	50.2 2.4	29.88 .24	30.5 2.0
14.9	25.76 .21	68.5 1.7	27.89 .21	29.2 3.6	45.94 .18	47.6 2.6	30.17 .33	28.6 1.7
24.9	25.99 .25	70.3 1.9	28.13 .27	25.7 3.5	46.15 .23	45.0 2.6	30.54 .41	27.2 1.3
Dec. 4.9	26.26 .29	72.2 2.0	28.43 .33	22.3 3.2	46.40 .27	42.3 2.7	30.99 .48	26.1 0.8
14.8	26.56 +.31	74.3 —2.1	28.79 +.38	19.2 —2.9	46.69 +.30	39.7 —2.6	31.49 +.53	25.5 +0.3
24.8	26.88 .33	76.4 2.1	29.18 .41	16.4 2.5	47.01 .32	37.1 2.5	32.04 .57	25.5 —0.2
34.8	27.22 +.34	78.6 —2.1	29.60 +.43	14.2 —2.1	47.34 +.34	34.8 —2.3	32.62 +.59	25.9 —0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis.		α Bootis. (<i>Arcturus</i> .)		θ Bootis.		ρ Bootis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 14 1	° ' " +64 51	h m 14 10	° ' " +19 42	h m 14 21	° ' " +52 19	h m 14 27	° ' " +30 49
	s	"	s	"	s	"	s	"
Jan. 0.8	34.55 +.56	57.5 -2.3	55.07 +.33	71.4 -2.5	39.34 +.42	30.6 -2.6	20.86 +.34	22.6 -2.6
10.8	35.13 .59	55.6 1.7	55.40 .34	69.0 2.2	39.77 .44	28.2 2.1	21.20 .35	20.2 2.2
20.8	35.74 .60	54.2 1.0	55.74 .34	67.0 1.9	40.22 .45	26.4 1.5	21.56 .36	18.2 1.8
30.7	36.34 .59	53.5 -0.4	56.08 .33	65.3 1.5	40.67 .45	25.2 0.9	21.92 .35	16.6 1.4
Feb. 9.7	36.92 .57	53.4 +0.3	56.40 .31	64.1 1.0	41.11 .43	24.6 -0.3	22.26 .34	15.5 0.8
19.7	37.47 +.52	54.0 +0.9	56.70 +.29	63.3 -0.6	41.53 +.40	24.7 +0.4	22.59 +.32	15.0 -0.3
29.6	37.96 .46	55.3 1.5	56.97 .26	62.9 -0.2	41.91 .36	25.4 1.0	22.89 .29	15.0 +0.2
Mar. 10.6	38.38 .38	57.1 2.0	57.21 .22	62.9 +0.3	42.25 .31	26.6 1.5	23.16 .25	15.5 0.7
20.6	38.73 .30	59.3 2.4	57.42 .19	63.4 0.6	42.53 .26	28.4 2.0	23.39 .21	16.3 1.2
30.6	38.98 .21	61.9 2.7	57.59 .15	64.2 1.0	42.76 .20	30.6 2.4	23.59 .17	17.8 1.5
Apr. 9.5	39.15 +.12	64.8 +2.9	57.73 +.12	65.3 +1.2	42.93 +.14	33.1 +2.6	23.74 +.14	19.5 +1.8
19.5	39.23 +.04	67.8 3.0	57.83 .08	66.6 1.4	43.04 .08	35.8 2.8	23.86 .10	21.4 2.0
29.5	39.22 -.05	70.8 3.0	57.89 .05	68.1 1.5	43.10 +.03	38.6 2.8	23.94 .06	23.5 2.1
May 9.5	39.13 .13	73.7 2.8	57.93 +.02	69.7 1.6	43.10 -.03	41.4 2.8	23.98 +.03	25.7 2.2
19.4	38.97 .20	76.5 2.6	57.94 -.01	71.3 1.6	43.05 .08	44.2 2.6	23.99 -.01	27.9 2.1
29.4	38.74 -.26	78.9 +2.3	57.92 -.03	72.9 +1.5	42.95 -.12	46.7 +2.4	23.97 -.04	30.0 +2.0
June 8.4	38.45 .31	81.0 1.9	57.87 .06	74.3 1.4	42.80 .16	48.9 2.1	23.92 .07	31.9 1.8
18.3	38.11 .36	82.7 1.5	57.81 .08	75.6 1.2	42.62 .20	50.8 1.7	23.84 .09	33.6 1.6
28.3	37.73 .39	83.9 1.0	57.72 .10	76.7 1.0	42.41 .23	52.3 1.3	23.74 .11	35.1 1.3
July 8.3	37.33 .41	84.7 +0.5	57.61 .11	77.6 0.8	42.17 .25	53.4 0.9	23.61 .13	36.2 1.0
18.3	36.91 -.43	84.9 0.0	57.49 -.13	78.2 +0.5	41.91 -.27	54.1 +0.4	23.47 -.15	37.1 +0.7
28.2	36.47 .43	84.6 -0.6	57.36 .14	78.6 +0.3	41.64 .28	54.2 -0.1	23.31 .16	37.5 +0.3
Aug. 7.2	36.04 .42	83.7 1.1	57.22 .14	78.7 0.0	41.37 .28	53.9 0.6	23.14 .17	37.7 -0.1
17.2	35.62 .41	82.4 1.6	57.08 .14	78.6 -0.3	41.09 .27	53.1 1.0	22.97 .16	37.4 0.5
27.2	35.23 .38	80.6 2.0	56.94 .13	78.1 0.6	40.82 .26	51.8 1.5	22.81 .16	36.8 0.8
Sept. 6.1	34.87 -.34	78.3 -2.5	56.82 -.12	77.3 -0.9	40.57 -.24	50.1 -1.9	22.65 -.15	35.8 -1.2
16.1	34.56 .28	75.6 2.9	56.71 .09	76.3 1.2	40.35 .20	47.9 2.4	22.51 .12	34.4 1.5
26.1	34.31 .22	72.6 3.2	56.63 .06	74.9 1.5	40.17 .16	45.4 2.7	22.40 .09	32.7 1.9
Oct. 6.0	34.12 .15	69.3 3.5	56.59 -.03	73.3 1.8	40.03 .11	42.5 3.1	22.32 .06	30.7 2.2
16.0	34.02 -.06	65.7 3.7	56.58 +.02	71.4 2.0	39.95 -.05	39.3 3.3	22.29 -.01	28.3 2.5
26.0	34.00 +.03	61.9 -3.8	56.62 +.07	69.2 -2.3	39.93 +.01	35.9 -3.5	22.30 +.04	25.7 -2.7
Nov. 5.0	34.07 .12	58.1 3.8	56.71 .11	66.8 2.5	39.97 .08	32.3 3.6	22.36 .09	22.9 2.9
14.9	34.24 .21	54.3 3.8	56.85 .16	64.3 2.6	40.09 .15	28.6 3.7	22.48 .14	19.9 3.0
24.9	34.50 .31	50.5 3.6	57.03 .21	61.5 2.7	40.28 .22	24.9 3.6	22.65 .19	16.8 3.1
Dec. 4.9	34.85 .39	47.0 3.4	57.26 .25	58.8 2.8	40.53 .29	21.3 3.5	22.87 .24	13.7 3.1
14.9	35.29 +.47	43.8 -3.0	57.54 +.29	56.0 -2.7	40.85 +.34	18.0 -3.2	23.13 +.28	10.7 -2.9
24.8	35.79 .53	40.9 2.6	57.84 .31	53.4 2.6	41.22 .39	14.9 2.8	23.44 .32	7.8 2.7
34.8	36.34 +.58	38.6 -2.1	58.16 +.33	50.9 -2.4	41.63 +.42	12.3 -2.4	23.77 +.34	5.2 -2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	5 Ursæ Minoris.		α Centauri (mean.)		ε Bootis.		α Libræ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 14 27	° ' " +76 8	h m 14 32	° ' " -60 24	h m 14 40	° ' " +27 30	h m 14 45	° ' " -15 36
Jan. 0.8	43.77 +.84	64.7 -2.3	30.71 +.56	14.0 0.0	26.59 +.32	28.7 -2.6	7.06 +.33	38.6 -1.5
10.8	44.66 .92	62.7 1.8	31.29 .58	14.3 -0.5	26.92 .34	26.2 2.3	7.39 .34	40.2 1.6
20.8	45.60 .96	61.2 1.1	31.88 .59	15.0 1.0	27.27 .35	24.1 1.9	7.74 .35	41.9 1.7
30.7	46.58 .97	60.4 -0.5	32.46 .58	16.2 1.4	27.62 .34	22.4 1.5	8.09 .34	43.6 1.7
Feb. 9.7	47.56 .95	60.2 +0.2	33.03 .55	17.8 1.8	27.96 .33	21.2 0.9	8.42 .33	45.2 1.6
19.7	48.49 +.90	60.8 +0.9	33.57 +.52	19.8 -2.1	28.28 +.31	20.5 -0.4	8.74 +.31	46.8 -1.5
29.7	49.35 .81	62.0 1.5	34.07 .48	22.0 2.4	28.58 .29	20.3 +0.1	9.04 .28	48.2 1.3
Mar. 10.6	50.10 .70	63.7 2.0	34.53 .43	24.5 2.6	28.85 .26	20.6 0.6	9.31 .26	49.4 1.2
20.6	50.74 .56	66.0 2.4	34.93 .38	27.2 2.7	29.09 .22	21.4 1.0	9.55 .23	50.5 1.0
30.6	51.23 .41	68.6 2.8	35.28 .32	29.9 2.8	29.30 .18	22.6 1.4	9.77 .20	51.4 0.8
Apr. 9.6	51.56 +.25	71.6 +3.0	35.56 +.26	32.8 -2.9	29.47 +.15	24.2 +1.7	9.95 +.17	52.2 -0.6
19.5	51.73 +.09	74.7 3.1	35.79 .20	35.6 2.8	29.60 .11	26.0 1.9	10.10 .14	52.7 0.5
29.5	51.74 -0.7	77.8 3.1	35.96 .14	38.4 2.7	29.69 .08	27.9 2.0	10.23 .11	53.1 0.3
May 9.5	51.59 .22	80.9 3.0	36.07 .08	41.1 2.6	29.75 .04	30.0 2.1	10.33 .08	53.3 0.2
19.4	51.30 .36	83.8 2.8	36.11 +.02	43.7 2.4	29.78 +.01	32.1 2.1	10.39 .05	53.5 -0.1
29.4	50.87 -49	86.4 +2.5	36.10 -0.3	46.0 -2.2	29.78 -0.2	34.1 +2.0	10.43 +0.2	53.5 0.0
June 8.4	50.33 .60	88.7 2.1	36.03 .10	48.1 1.9	29.74 .05	36.0 1.8	10.44 .00	53.4 +0.1
18.4	49.68 .69	90.6 1.6	35.89 .16	49.9 1.6	29.68 .08	37.8 1.6	10.42 -0.3	53.3 0.2
28.3	48.94 .77	92.0 1.2	35.71 .21	51.4 1.3	29.59 .10	39.2 1.3	10.38 .06	53.0 0.3
July 8.3	48.14 .82	92.9 0.6	35.48 .25	52.4 0.9	29.48 .12	40.5 1.1	10.31 .08	52.7 0.3
18.3	47.30 -86	93.3 +0.1	35.21 -29	53.1 -0.4	29.34 -14	41.4 +0.8	10.22 -10	52.4 +0.4
28.3	46.43 .87	93.1 -0.3	34.90 .31	53.3 0.0	29.20 .15	42.0 0.4	10.11 .12	52.0 0.4
Aug. 7.2	45.55 .87	92.4 0.9	34.58 .33	53.1 +0.4	29.04 .16	42.3 +0.1	9.98 .13	51.5 0.5
17.2	44.69 .85	91.2 1.5	34.25 .33	52.5 0.9	28.87 .17	42.2 -0.3	9.85 .13	51.0 0.5
27.2	43.86 .80	89.5 2.0	33.93 .31	51.4 1.3	28.70 .16	41.7 0.6	9.71 .13	50.5 0.5
Sept. 6.1	43.09 -74	87.3 -2.4	33.63 -28	49.9 +1.6	28.55 -15	40.9 -1.0	9.59 -12	50.0 +0.5
16.1	42.39 .65	84.8 2.8	33.37 .23	48.1 1.9	28.41 .13	39.8 1.3	9.47 .10	49.5 0.4
26.1	41.79 .55	81.8 3.2	33.16 .17	46.0 2.2	28.29 .10	38.3 1.6	9.38 .07	49.1 0.4
Oct. 6.1	41.29 .43	78.5 3.4	33.02 .10	43.8 2.3	28.21 .06	36.5 2.0	9.32 -04	48.7 0.3
16.0	40.93 .29	74.9 3.7	32.96 -02	41.4 2.4	28.16 -02	34.3 2.3	9.30 .00	48.5 +0.1
26.0	40.71 -14	71.1 -3.8	32.99 +0.7	39.0 +2.3	28.16 +0.3	31.9 -2.5	9.33 +0.5	48.5 -0.1
Nov. 5.0	40.64 +0.2	67.3 3.9	33.11 .17	36.8 2.2	28.21 .08	29.3 2.7	9.41 .10	48.7 0.3
15.0	40.74 .18	63.4 3.8	33.33 .26	34.7 1.9	28.32 .13	26.4 2.9	9.53 .15	49.2 0.5
24.9	41.00 .34	59.6 3.7	33.64 .35	32.9 1.6	28.47 .18	23.5 3.0	9.71 .20	49.8 0.8
Dec. 4.9	41.42 .50	56.0 3.5	34.03 .43	31.4 1.2	28.68 .24	20.5 3.0	9.94 .25	50.7 1.0
14.9	42.00 +.64	52.7 -3.1	34.49 +.49	30.4 +0.8	28.93 +.27	17.5 -2.9	10.21 +.28	51.9 -1.2
24.8	42.71 .77	49.8 2.6	35.01 .54	29.9 +0.3	29.22 .30	14.7 2.7	10.51 .31	53.2 1.4
34.8	43.54 +.87	47.4 -2.2	35.57 +.57	29.8 -0.1	29.54 +.33	12.0 2.5	10.83 +.33	54.7 -1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ursæ Minoris.		β Bootis.		β Libræ.		μ^1 Bootis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 14 50	° ' +74 34	h m 14 58	° ' +40 47	h m 15 11	° ' - 9 0	h m 15 20	° ' +37 43
	s	"	s	"	s	"	s	"
Jan. 0.8	59.05 +.71	25.3 -2.6	1.37 +.33	42.8 -2.8	24.15 +.30	3.8 -1.6	33.20 +.31	72.5 -2.9
10.8	59.82 .80	23.0 2.1	1.72 .36	40.1 2.4	24.47 .32	5.4 1.7	33.52 .34	69.7 2.6
20.8	60.65 .85	21.2 1.5	2.09 .38	37.9 2.0	24.80 .33	7.1 1.6	33.87 .36	67.4 2.1
30.8	61.52 .88	20.0 0.8	2.47 .38	36.2 1.4	25.13 .33	8.7 1.6	34.23 .36	65.5 1.6
Feb. 9.7	62.41 .87	19.6 -0.1	2.85 .37	35.1 0.8	25.46 .32	10.2 1.4	34.60 .36	64.2 1.1
19.7	63.27 +.84	19.8 +0.6	3.22 +.36	34.6 -0.2	25.78 +.31	11.6 -1.3	34.96 +.35	63.4 -0.5
29.7	64.08 .78	20.7 1.2	3.56 .33	34.6 +0.4	26.08 .29	12.7 1.1	35.30 .33	63.2 +0.1
Mar. 10.7	64.82 .68	22.1 1.8	3.88 .30	35.3 0.9	26.36 .27	13.7 0.8	35.62 .30	63.6 0.7
20.6	65.45 .57	24.2 2.3	4.15 .26	36.5 1.4	26.62 .24	14.4 0.6	35.90 .27	64.6 1.2
30.6	65.97 .45	26.7 2.6	4.39 .22	38.1 1.8	26.85 .22	14.9 0.4	36.16 .24	66.0 1.6
Apr. 9.6	66.34 +.31	29.5 +2.9	4.59 +.18	40.1 +2.2	27.05 +.19	15.2 -0.2	36.37 +.20	67.8 +2.0
19.5	66.58 .16	32.5 3.1	4.75 .13	42.5 2.4	27.22 .16	15.3 0.0	36.55 .16	70.0 2.3
29.5	66.68 +.02	35.7 3.2	4.86 .09	45.0 2.6	27.37 .13	15.2 +0.1	36.69 .12	72.5 2.5
May 9.5	66.63 -.12	38.8 3.1	4.92 .05	47.6 2.6	27.49 .10	15.0 0.3	36.78 .08	75.0 2.6
19.5	66.45 .25	41.9 2.9	4.95 +.01	50.2 2.6	27.58 .07	14.7 0.4	36.84 +.04	77.6 2.6
29.4	66.14 -.37	44.7 +2.7	4.93 -.03	52.8 +2.5	27.63 +.04	14.3 +0.4	36.86 .00	80.2 +2.5
June 8.4	65.71 .48	47.2 2.3	4.88 .07	55.1 2.2	27.66 +.02	13.8 0.5	36.83 -.04	82.7 2.4
18.4	65.18 .57	49.4 1.9	4.79 .11	57.3 2.0	27.67 -.01	13.3 0.5	36.77 .08	84.9 2.1
28.4	64.57 .65	51.1 1.5	4.67 .14	59.1 1.7	27.64 .04	12.8 0.5	36.68 .11	86.9 1.8
July 8.3	63.88 .71	52.4 1.0	4.52 .16	60.6 1.3	27.58 .07	12.3 0.5	36.55 .14	88.6 1.5
18.3	63.14 -.76	53.1 +0.5	4.34 -.19	61.7 +0.9	27.50 -.09	11.8 +0.5	36.40 -.17	89.9 +1.1
28.3	62.36 .79	53.3 -0.1	4.15 .20	62.4 0.5	27.40 .11	11.4 0.5	36.22 .19	90.9 0.7
Aug. 7.2	61.56 .80	53.0 0.6	3.94 .21	62.7 +0.1	27.28 .13	10.9 0.5	36.02 .20	91.4 +0.3
17.2	60.76 .79	52.2 1.1	3.72 .22	62.5 -0.4	27.14 .14	10.5 0.4	35.81 .21	91.5 -0.1
27.2	59.98 .76	50.8 1.6	3.50 .22	61.9 0.8	27.01 .14	10.1 0.3	35.59 .21	91.2 0.5
Sept. 6.2	59.24 -.71	49.0 -2.1	3.28 -.21	60.9 -1.3	26.87 -.13	9.8 +0.3	35.38 -.21	90.5 -1.0
16.1	58.55 .65	46.7 2.5	3.08 .18	59.4 1.7	26.74 .12	9.5 0.2	35.18 .19	89.3 1.4
26.1	57.94 .57	44.0 2.9	2.91 .15	57.6 2.1	26.64 .09	9.4 +0.1	35.00 .17	87.8 1.8
Oct. 6.1	57.42 .46	40.9 3.2	2.78 .12	55.3 2.4	26.56 .06	9.4 -0.1	34.85 .13	85.8 2.1
16.1	57.01 .35	37.5 3.5	2.68 .07	52.7 2.8	26.51 -.02	9.6 0.3	34.73 .09	83.5 2.5
26.0	56.73 -.21	33.9 -3.7	2.64 -.02	49.8 -3.0	26.51 +.02	9.9 -0.5	34.67 -.04	80.8 -2.8
Nov. 5.0	56.59 -.07	30.1 3.8	2.65 +.04	46.7 3.2	26.56 .07	10.5 0.7	34.66 +.02	77.9 3.0
15.0	56.59 +.08	26.2 3.9	2.72 .10	43.4 3.4	26.66 .12	11.3 0.9	34.70 .07	74.7 3.2
24.9	56.75 .23	22.4 3.8	2.85 .16	40.0 3.4	26.80 .17	12.3 1.1	34.80 .13	71.5 3.3
Dec. 4.9	57.06 .38	18.7 3.6	3.04 .22	36.5 3.4	27.00 .22	13.4 1.3	34.96 .19	68.1 3.3
14.9	57.51 +.52	15.2 -3.3	3.28 +.27	33.2 -3.2	27.23 +.26	14.8 -1.4	35.18 +.24	64.8 -3.2
24.9	58.10 .61	12.1 2.9	3.57 .31	30.0 3.0	27.51 .29	16.3 1.6	35.44 .28	61.6 3.0
34.8	58.79 +.74	9.4 -2.5	3.90 +.34	27.2 -2.7	27.81 +.31	17.9 -1.7	35.74 +.32	58.7 -2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ϵ Serpentis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	$^{\text{h}}$ $^{\text{m}}$ 15 20	$^{\circ}$ $'$ +72 11	$^{\text{h}}$ $^{\text{m}}$ 15 30	$^{\circ}$ $'$ +27 3	$^{\text{h}}$ $^{\text{m}}$ 15 39	$^{\circ}$ $'$ + 6 44	$^{\text{h}}$ $^{\text{m}}$ 15 45	$^{\circ}$ $'$ + 4 47
Jan. 0.9	51.77 +.36	51.4 -3.0	16.58 +.29	36.7 -2.8	8.19 +.28	58.7 -2.2	37.36 +.27	16.4 -2.1
10.8	52.39 -.65	48.7 2.4	16.89 -.31	34.1 2.5	8.49 .30	56.6 2.0	37.65 .30	14.4 2.0
20.8	53.08 -.72	46.6 1.9	17.21 -.33	31.7 2.1	8.79 -.31	54.6 1.9	37.95 .31	12.5 1.8
30.8	53.83 -.76	45.0 1.2	17.55 -.34	29.8 1.7	9.11 .32	52.8 1.6	38.27 .32	10.7 1.6
Feb. 9.8	54.60 .77	44.1 -0.6	17.89 -.34	28.3 1.2	9.43 .32	51.3 1.3	38.59 .32	9.2 1.3
19.7	55.37 +.76	43.9 +0.1	18.22 +.33	27.3 -0.7	9.75 +.31	50.1 -1.0	38.91 +.31	8.0 -1.0
29.7	56.11 .72	44.3 0.8	18.54 .31	26.9 -0.2	10.05 .30	49.3 0.7	39.21 .30	7.2 0.7
Mar. 10.7	56.80 .65	45.5 1.4	18.84 .29	26.9 +0.3	10.34 .28	48.8 -0.3	39.50 .28	6.6 -0.3
20.6	57.42 .57	47.2 2.0	19.11 .26	27.5 0.8	10.60 .25	48.7 +0.1	39.77 .26	6.5 0.0
30.6	57.95 .47	49.4 2.4	19.36 .23	28.5 1.2	10.85 .23	48.9 0.4	40.02 .23	6.6 +0.3
Apr. 9.6	58.36 +.36	52.0 +2.8	19.57 +.20	29.9 +1.6	11.06 +.20	49.5 +0.7	40.24 +.21	7.1 +0.6
19.6	58.67 .24	54.9 3.0	19.75 .17	31.7 1.9	11.25 .18	50.3 0.9	40.43 .18	7.8 0.8
29.5	58.85 +.12	58.1 3.2	19.90 .13	33.6 2.1	11.41 .15	51.3 1.1	40.60 .15	8.8 1.0
May 9.5	58.91 .00	61.3 3.2	20.01 .10	35.8 2.2	11.55 .12	52.5 1.2	40.74 .12	9.8 1.1
19.5	58.85 -1.12	64.4 3.1	20.09 .06	38.1 2.2	11.65 .09	53.8 1.3	40.85 .10	11.0 1.2
29.5	58.67 -.23	67.5 +2.9	20.13 +0.3	40.3 +2.2	11.72 +0.6	55.1 +1.3	40.93 +0.7	12.3 +1.3
June 8.4	58.39 .33	70.3 2.6	20.14 -.01	42.4 2.1	11.77 +0.3	56.5 1.3	40.99 +0.4	13.6 1.2
18.4	58.01 -.43	72.7 2.3	20.12 .04	44.5 1.9	11.78 .00	57.8 1.3	41.00 .00	14.8 1.2
28.4	57.53 .52	74.9 1.9	20.06 .07	46.3 1.7	11.76 -.03	59.0 1.2	40.99 -.03	15.9 1.1
July 8.3	56.99 .58	76.5 1.4	19.98 .10	47.9 1.4	11.71 .06	60.1 1.0	40.95 .06	17.0 1.0
18.3	56.38 -.63	77.7 +0.9	19.86 -.13	49.2 +1.1	11.63 -.09	61.0 +0.8	40.88 -.09	17.9 +0.9
28.3	55.72 .67	78.4 +0.4	19.72 .15	50.2 0.8	11.53 .11	61.8 0.7	40.78 .11	18.7 0.7
Aug. 7.3	55.03 .70	78.6 -0.1	19.56 .17	50.8 0.5	11.41 .13	62.4 0.5	40.66 .13	19.4 0.5
17.2	54.33 .71	78.3 0.6	19.39 .18	51.1 +0.1	11.27 .14	62.9 0.3	40.52 .14	19.8 0.4
27.2	53.62 .70	77.4 1.1	19.21 .18	51.1 -0.2	11.12 .15	63.1 +0.1	40.37 .15	20.1 +0.2
Sept. 6.2	52.93 -.67	76.0 -1.6	19.02 -.18	50.7 -0.6	10.97 -.15	63.2 -0.1	40.22 -.15	20.2 0.0
16.2	52.28 .62	74.1 2.1	18.85 .16	49.9 1.0	10.83 .14	63.0 0.3	40.08 .14	20.1 -0.2
26.1	51.68 .56	71.8 2.5	18.70 .14	48.7 1.3	10.70 .12	62.6 0.5	39.95 .12	19.7 0.5
Oct. 6.1	51.16 .48	69.1 2.9	18.56 .11	47.2 1.7	10.59 .09	61.9 0.8	39.83 .09	19.1 0.7
16.1	50.72 .38	66.0 3.2	18.47 .07	45.4 2.0	10.52 .05	61.0 1.0	39.76 .06	18.4 0.9
26.0	50.39 -.27	62.6 -3.5	18.42 -.03	43.2 -2.3	10.48 -.01	59.8 -1.3	39.72 -.02	17.3 -1.1
Nov. 5.0	50.17 .15	58.9 3.7	18.41 +0.2	40.7 2.6	10.49 +0.3	58.4 1.5	39.72 +0.3	16.1 1.4
15.0	50.09 -.02	55.2 3.8	18.46 .07	38.1 2.8	10.55 .08	56.8 1.7	39.77 .08	14.6 1.6
25.0	50.14 +.12	51.3 3.8	18.56 .13	35.2 2.9	10.65 .13	55.0 1.9	39.88 .13	12.9 1.8
Dec. 4.9	50.32 .25	47.5 3.7	18.71 .18	32.2 3.0	10.81 .17	53.0 2.1	40.03 .17	11.0 1.9
14.9	50.64 +.38	43.9 -3.5	18.92 +.22	29.2 -2.9	11.01 +.22	50.9 -2.1	40.22 +.22	9.1 -2.0
24.9	51.08 .50	40.6 3.2	19.16 .26	26.3 2.8	11.25 .26	48.7 2.2	40.46 .25	7.0 2.1
34.9	51.63 +.59	37.6 -2.8	19.44 +.30	23.5 -2.7	11.52 +.28	46.6 -2.1	40.73 +.28	4.9 -2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpîi.		β ¹ Scorpîi.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h ^m 15 47	[°] ['] +78 6	^h ^m 15 53	[°] ['] +27 10	^h ^m 15 54	[°] ['] -22 19	^h ^m 15 59	[°] ['] -19 31
	^s	["]	^s	["]	^s	["]	^s	["]
Jan. 0.9	42.68+ .67	29.6 -3.1	16.34 +.27	28.9 -2.8	10.30 +.30	36.6 -0.8	22.67 +.29	20.0 -0.9
10.9	43.44 .83	26.7 2.6	16.62 .30	26.2 2.6	10.61 .33	37.6 1.0	22.97 .31	21.0 1.0
20.8	44.34 .95	24.4 2.1	16.93 .32	23.8 2.2	10.95 .34	38.6 1.1	23.30 .33	22.1 1.1
30.8	45.34 1.03	22.6 1.5	17.26 .33	21.7 1.8	11.30 .35	39.7 1.1	23.64 .34	23.2 1.1
Feb. 9.8	46.41 1.08	21.4 0.8	17.59 .33	20.1 1.3	11.65 .35	40.8 1.1	23.99 .34	24.4 1.1
19.7	47.50+1.09	20.9 -0.1	17.92 +.32	19.0 -0.8	11.99 +.34	42.0 -1.1	24.32 +.33	25.5 -1.1
29.7	48.59 1.06	21.1 +0.5	18.25 .31	18.4 -0.3	12.33 .33	43.1 1.0	24.65 .32	26.5 1.0
Mar. 10.7	49.62 .99	22.0 1.2	18.55 .30	18.4 +0.2	12.64 .31	44.1 1.0	24.97 .31	27.5 0.9
20.7	50.56 .89	23.4 1.7	18.84 .27	18.9 0.7	12.95 .29	45.0 0.9	25.27 .29	28.3 0.8
30.6	51.39 .75	25.4 2.2	19.10 .25	19.8 1.1	13.23 .27	45.8 0.8	25.55 .27	29.0 0.6
Apr. 9.6	52.07+ .60	27.9 +2.6	19.33 +.22	21.2 +1.5	13.48 +.24	46.6 -0.7	25.80 +.24	29.6 -0.5
19.6	52.58 .43	30.7 2.9	19.54 .19	22.9 1.9	13.71 .22	47.2 0.6	26.03 .22	30.0 0.4
29.6	52.92 .25	33.8 3.1	19.71 .15	24.9 2.1	13.92 .19	47.7 0.5	26.24 .19	30.4 0.3
May 9.5	53.08+ .06	37.0 3.2	19.84 .12	27.1 2.2	14.09 .16	48.1 0.4	26.41 .16	30.6 0.2
19.5	53.05- .12	40.2 3.2	19.94 .08	29.4 2.3	14.23 .13	48.5 0.3	26.55 .13	30.8 0.1
29.5	52.84- .30	43.3 +3.0	20.01 +.05	31.7 +2.3	14.34 +.09	48.7 -0.2	26.67 +.10	30.9 -0.1
June 8.4	52.46 .46	46.3 2.8	20.04 +.01	34.0 2.2	14.42 .06	49.0 0.2	26.75 .06	30.9 0.0
18.4	51.92 .61	49.0 2.5	20.03 -.02	36.2 2.1	14.46 +.02	49.1 0.1	26.79 +.03	30.9 0.0
28.4	51.23 .75	51.3 2.1	20.00 .06	38.2 1.9	14.47 -.01	49.2 -0.1	26.81 -.01	30.9 +0.1
July 8.4	50.42 .87	53.2 1.7	19.92 .09	39.9 1.6	14.44 .05	49.3 0.0	26.78 .04	30.8 0.1
18.3	49.50- .96	54.7 +1.2	19.82 -.12	41.4 +1.3	14.37 -.08	49.2 +0.1	26.72 -.07	30.6 +0.2
28.3	48.50 1.04	55.7 0.7	19.68 .15	42.6 1.0	14.28 .11	49.1 0.2	26.63 .10	30.4 0.2
Aug. 7.3	47.43 1.09	56.2 +0.2	19.53 .17	43.4 0.7	14.16 .13	48.9 0.2	26.52 .12	30.2 0.3
17.3	46.32 1.12	56.2 -0.3	19.35 .18	43.9 +0.3	14.02 .15	48.6 0.3	26.38 .14	29.9 0.3
27.2	45.20 1.12	55.7 0.8	19.16 .19	44.1 -0.1	13.87 .16	48.3 0.4	26.23 .15	29.6 0.4
Sept. 6.2	44.09-1.09	54.6 -1.3	18.97 -.19	43.8 -0.4	13.71 -.16	47.9 +0.4	26.08 -.16	29.2 +0.4
16.2	43.02 1.04	53.1 1.8	18.79 .18	43.2 0.8	13.55 .15	47.4 0.5	25.92 .15	28.8 0.4
26.1	42.02 .96	51.0 2.2	18.62 .16	42.2 1.2	13.42 .13	46.9 0.5	25.78 .13	28.4 0.4
Oct. 6.1	41.10 .86	48.6 2.6	18.47 .13	40.9 1.5	13.30 .10	46.4 0.5	25.66 .10	28.0 0.4
16.1	40.30 .73	45.8 3.0	18.35 .10	39.2 1.9	13.22 .06	45.9 0.4	25.58 .06	27.6 0.3
26.1	39.65- .58	42.6 -3.3	18.27 -.05	37.1 -2.2	13.18 -.01	45.5 +0.3	25.54 -.01	27.4 +0.2
Nov. 5.0	39.15 .40	39.1 3.5	18.24 .00	34.8 2.5	13.19 +.04	45.2 0.2	25.54 +.03	27.2 +0.1
15.0	38.84 .22	35.5 3.7	18.26 +.05	32.2 2.7	13.25 .09	45.0 +0.1	25.60 .08	27.2 -0.1
25.0	38.72-.02	31.8 3.7	18.34 .10	29.4 2.9	13.37 .14	45.0 -0.1	25.71 .13	27.4 0.3
Dec. 5.0	38.80+ .18	28.0 3.7	18.46 .15	26.4 3.0	13.54 .19	45.3 0.3	25.86 .18	27.8 0.5
14.9	39.08+ .38	24.4 -3.5	18.64 +.20	23.5 -3.0	13.76 +.24	45.7 -0.5	26.07 +.23	28.3 -0.6
24.9	39.56 .57	20.9 3.3	18.87 .24	20.5 2.9	14.02 .28	46.3 0.7	26.33 .27	29.1 0.8
34.9	40.21+ .72	17.8 -2.9	19.13 +.28	17.7 2.7	14.31 +.31	47.2 -0.9	26.61 +.30	29.9 -0.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 2320.		δ Ophiuchi.		τ Herculis.		γ Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 16 5	[°] ['] +68 4	^h ^m 16 8	[°] ['] - 3 25	^h ^m 16 16	[°] ['] +46 33	^h ^m 16 22	[°] ['] +61 44
Jan. 0.9	59.82 +.39	42.5 -3.3	53.07 +.26	44.2 -1.7	35.80 +.27	21.1 -3.3	33.24 +.31	39.2 -3.4
10.9	60.26 .48	39.4 2.9	53.34 .29	45.9 1.7	36.09 .31	18.0 2.9	33.59 .38	35.9 3.0
20.8	60.78 .55	36.7 2.4	53.64 .31	47.5 1.6	36.42 .35	15.2 2.3	34.00 .44	33.1 2.6
30.8	61.36 .60	34.6 1.8	53.96 .32	49.1 1.4	36.78 .37	12.9 2.0	34.47 .48	30.8 2.0
Feb. 9.8	61.98 .63	33.1 1.2	54.28 .32	50.4 1.3	37.17 .39	11.2 1.5	34.96 .51	29.0 1.4
19.8	62.61 +.64	32.3 -0.5	54.59 +.31	51.6 -1.0	37.56 +.39	10.0 -0.8	35.48 +.52	27.9 -0.8
29.7	63.25 .63	32.1 +0.2	54.91 .30	52.5 0.8	37.95 .38	9.5 -0.2	36.00 .51	27.5 -0.1
Mar. 10.7	63.87 .59	32.6 0.8	55.20 .29	53.1 0.5	38.32 .36	9.6 +0.4	36.51 .50	27.7 +0.6
20.7	64.44 .54	33.8 1.5	55.49 .27	53.5 -0.2	38.67 .34	10.4 1.0	37.00 .46	28.6 1.2
30.7	64.96 .48	35.6 2.0	55.75 .25	53.6 0.0	39.00 .31	11.7 1.6	37.44 .42	30.1 1.8
Apr. 9.6	65.40 +.40	37.8 +2.5	55.99 +.23	53.5 +0.3	39.30 +.27	13.5 +2.0	37.83 +.36	32.2 +2.3
19.6	65.76 .32	40.5 2.8	56.21 .21	53.1 0.5	39.55 .23	15.8 2.4	38.16 .30	34.7 2.7
29.6	66.04 .22	43.5 3.1	56.40 .18	52.5 0.6	39.76 .18	18.4 2.7	38.42 .23	37.6 3.0
May 9.5	66.21 .13	46.6 3.2	56.57 .15	51.8 0.8	39.92 .14	21.2 2.9	38.62 .16	40.7 3.2
19.5	66.29 +.03	49.9 3.3	56.71 .12	51.0 0.9	40.04 .09	24.2 3.0	38.74 .08	43.9 3.2
29.5	66.27 -.07	53.2 +3.2	56.82 +.09	50.2 +0.9	40.10 +.04	27.2 +3.0	38.78 +.01	47.1 +3.2
June 8.5	66.16 .16	56.3 3.0	56.90 .06	49.3 0.9	40.12 .01	30.2 2.9	38.75 -.07	50.3 3.1
18.4	65.95 .25	59.2 2.8	56.94 +.03	48.4 0.9	40.09 .06	33.0 2.7	38.64 .14	53.4 2.9
28.4	65.66 .33	61.8 2.4	56.95 .00	47.5 0.8	40.01 .10	35.6 2.5	38.47 .21	56.1 2.7
July 8.4	65.30 .40	64.1 2.0	56.93 -.04	46.7 0.8	39.88 .15	37.9 2.1	38.23 .27	58.6 2.3
18.4	64.86 -.46	65.9 +1.6	56.88 -.07	46.0 +0.7	39.72 -.19	39.8 +1.8	37.93 -.32	60.7 +1.9
28.3	64.37 .51	67.3 1.1	56.79 .10	45.4 0.6	39.51 .22	41.4 1.3	37.58 .37	62.3 1.4
Aug. 7.3	63.83 .55	68.2 0.6	56.68 .12	44.8 0.5	39.28 .25	42.5 0.9	37.19 .41	63.5 0.9
17.3	63.26 .58	68.6 +0.1	56.55 .14	44.4 0.4	39.02 .27	43.2 +0.5	36.76 .44	64.2 +0.4
27.2	62.68 .59	68.5 -0.4	56.41 .15	44.0 0.3	38.74 .28	43.5 0.0	36.32 .45	64.4 -0.1
Sept. 6.2	62.08 -.59	67.8 -0.9	56.26 -.15	43.8 +0.2	38.45 -.28	43.2 -0.5	35.86 -.45	64.0 -0.6
16.2	61.50 .56	66.6 1.4	56.10 .14	43.7 0.0	38.17 .27	42.5 1.0	35.41 .44	63.2 1.1
26.2	60.95 .53	65.0 1.9	55.96 .13	43.7 -0.1	37.90 .26	41.3 1.4	34.98 .42	61.8 1.6
Oct. 6.1	60.45 .47	62.8 2.4	55.84 .11	44.0 0.3	37.66 .23	39.6 1.9	34.57 .38	60.0 2.1
16.1	60.01 .40	60.3 2.8	55.75 .07	44.3 0.5	37.45 .19	37.5 2.3	34.22 .33	57.7 2.5
26.1	59.64 -.32	57.3 -3.1	55.70 -.03	44.9 -0.7	37.28 -.14	35.0 -2.7	33.92 -.26	55.0 -2.9
Nov. 5.1	59.36 .22	54.0 3.4	55.69 +.01	45.7 0.9	37.17 .08	32.1 3.0	33.70 .19	51.9 3.2
15.0	59.19 .12	50.5 3.6	55.72 .06	46.6 1.1	37.12 -.02	29.0 3.3	33.55 .10	48.5 3.5
25.0	59.13 -.01	46.8 3.7	55.81 .11	47.8 1.2	37.13 +.04	25.6 3.4	33.49 -.01	44.9 3.7
Dec. 5.0	59.18 +.11	43.0 3.8	55.95 .16	49.1 1.4	37.21 .11	22.1 3.5	33.53 +.08	41.2 3.7
14.9	59.35 +.22	39.3 -3.7	56.13 +.20	50.6 -1.5	37.36 +.17	18.6 -3.5	33.65 +.17	37.5 -3.7
24.9	59.62 .33	35.7 3.5	56.35 .24	52.1 1.6	37.56 .23	15.1 3.4	33.87 .26	33.8 3.5
34.9	60.00 +.42	32.4 -3.2	56.61 +.27	53.8 -1.6	37.82 +.28	11.8 3.2	34.17 +.33	30.4 -3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Scorpii. (Antares.)		β Herculis.		Λ Draconis.		ζ Ophiuchi.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h ^m 16 23	[°] ['] —26 12	^h ^m 16 25	[°] ['] +21 42	^h ^m 16 28	[°] ['] +68 59	^h ^m 16 31	[°] ['] —10 21
Jan. 0.9	0.96 +.28	8.6 —0.5	44.18 +.24	44.8 —2.7	8.70 +.35	15.3 —3.4	25.17 +.25	30.8 —1.2
10.9	1.27 .31	9.1 0.6	44.44 .27	42.1 2.5	9.10 .45	12.0 3.0	25.44 .28	32.0 1.3
20.9	1.60 .34	9.8 0.8	44.72 .29	39.8 2.2	9.60 .53	9.2 2.6	25.74 .30	33.3 1.3
30.8	1.94 .35	10.6 0.9	45.02 .31	37.7 1.9	10.16 .59	6.9 2.0	26.05 .31	34.5 1.2
Feb. 9.8	2.30 .36	11.4 0.9	45.34 .32	36.0 1.5	10.78 .63	5.1 1.4	26.37 .32	35.7 1.1
19.8	2.65 +.35	12.3 —0.9	45.66 +.32	34.8 —1.0	11.43 +.65	4.0 —0.8	26.69 +.32	36.7 —0.9
29.8	3.00 .34	13.1 0.9	45.98 .31	34.0 —0.5	12.09 .65	3.6 —0.1	27.01 .31	37.5 0.7
Mar. 10.7	3.34 .33	14.0 0.9	46.29 .30	33.7 0.0	12.74 .63	3.8 +0.6	27.32 .30	38.2 0.5
20.7	3.67 .32	14.8 0.8	46.58 .28	33.9 +0.4	13.35 .59	4.7 1.2	27.62 .29	38.6 0.4
30.7	3.97 .30	15.5 0.8	46.86 .26	34.6 0.9	13.92 .53	6.3 1.8	27.90 .27	38.9 —0.1
Apr. 9.6	4.26 +.28	16.2 —0.7	47.11 +.24	35.7 +1.3	14.41 +.46	8.4 +2.3	28.16 +.25	38.9 +0.1
19.6	4.52 .25	16.8 0.6	47.34 .21	37.1 1.6	14.83 .37	10.9 2.7	28.40 .23	38.8 0.2
29.6	4.76 .22	17.4 0.6	47.54 .18	38.9 1.9	15.16 .28	13.8 3.0	28.62 .21	38.5 0.3
May 9.6	4.97 .19	17.9 0.5	47.70 .15	40.9 2.1	15.40 .18	16.9 3.2	28.82 .18	38.1 0.4
19.5	5.14 .16	18.4 0.5	47.84 .12	43.0 2.2	15.53 +.08	20.2 3.3	28.99 .15	37.6 0.5
29.5	5.29 +.13	18.8 —0.5	47.94 +.09	45.2 +2.2	15.56 —.02	23.5 +3.3	29.12 +.12	37.0 +0.5
June 8.5	5.39 .09	19.2 0.4	48.01 .05	47.4 2.2	15.49 .12	26.7 3.1	29.23 .09	36.5 0.6
18.4	5.47 .05	19.5 0.4	48.05 +.01	49.6 2.1	15.32 .22	29.7 2.9	29.29 .05	35.9 0.6
28.4	5.50 +.02	19.8 0.3	48.04 —.02	51.6 1.9	15.05 .31	32.6 2.7	29.33 +.02	35.3 0.6
July 8.4	5.49 —.02	20.1 0.3	48.00 .06	53.4 1.7	14.71 .39	35.1 2.3	29.33 —.02	34.8 0.5
18.4	5.44 —.06	20.2 —0.2	47.93 —.09	55.0 +1.5	14.28 —.46	37.2 +1.9	29.29 —.05	34.3 +0.5
28.3	5.36 .09	20.3 —0.1	47.82 .12	56.3 1.2	13.79 .52	38.8 1.5	29.22 .09	33.8 0.4
Aug. 7.3	5.25 .12	20.3 0.0	47.68 .15	57.4 0.9	13.24 .57	40.1 1.0	29.12 .11	33.4 0.4
17.3	5.11 .13	20.3 +0.1	47.53 .17	58.1 0.6	12.65 .60	40.8 +0.5	28.99 .13	33.1 0.3
27.3	4.95 .16	20.1 0.2	47.35 .18	58.5 +0.2	12.03 .62	41.0 —0.1	28.85 .15	32.8 0.3
Sept. 6.2	4.79 —.17	19.7 +0.3	47.17 —.18	58.6 —0.1	11.40 —.63	40.7 —0.6	28.70 —.15	32.5 +0.2
16.2	4.62 .16	19.3 0.4	46.98 .18	58.3 0.4	10.77 .62	39.8 1.1	28.54 .15	32.3 0.2
26.2	4.46 .15	18.8 0.5	46.81 .17	57.7 0.8	10.17 .58	38.5 1.6	28.39 .14	32.2 +0.1
Oct. 6.1	4.32 .12	18.3 0.5	46.65 .14	56.7 1.1	9.60 .54	36.6 2.1	28.26 .12	32.1 0.0
16.1	4.21 .08	17.7 0.5	46.52 .11	55.4 1.5	9.09 .47	34.3 2.5	28.15 .09	32.2 —0.1
26.1	4.15 —.04	17.1 +0.5	46.42 —.07	53.8 —1.8	8.66 —.39	31.6 —2.9	28.08 —.05	32.4 —0.3
Nov. 5.1	4.13 +.01	16.6 0.4	46.37 —.03	51.8 2.1	8.31 .30	28.5 3.2	28.05 .00	32.7 0.4
15.0	4.16 .06	16.2 0.3	46.36 +.02	49.6 2.3	8.07 .19	25.1 3.5	28.07 +.04	33.2 0.6
25.0	4.25 .11	15.9 +0.2	46.41 .07	47.2 2.5	7.93 —.07	21.5 3.7	28.14 .09	33.8 0.7
Dec. 5.0	4.40 .17	15.7 0.0	46.51 .12	44.6 2.6	7.92 +.05	17.8 3.7	28.26 .14	34.7 0.9
14.9	4.59 +.22	15.8 —0.2	46.65 +.17	41.9 —2.7	8.03 +.16	14.1 —3.7	28.43 +.19	35.7 —1.0
24.9	4.84 .26	16.0 0.4	46.85 .21	39.1 2.7	8.25 .28	10.4 3.5	28.64 .23	36.8 1.1
34.9	5.12 +.30	16.4 0.5	47.08 +.25	36.5 —2.6	8.59 +.38	7.0 —3.3	28.89 +.26	37.9 —1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australis.		η Herculis.		κ Ophiuchi.		ϵ Ursæ Minoris.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 16 37	[°] ['] -68 50	^h ^m 16 39	[°] ['] +39 6	^h ^m 16 52	[°] ['] + 9 31	^h ^m 16 56	[°] ['] +82 11
	^s	["]	^s	["]	^s	["]	^s	["]
Jan. 0.9	36.41 +.57	9.8 +1.8	18.72 +.23	56.2 -3.2	43.94 +.22	61.2 -2.1	28.79+ .52	72.1 -3.4
10.9	37.03 .65	8.2 1.4	18.97 .27	53.1 2.9	44.18 .25	59.1 2.1	29.45 .80	68.9 3.1
20.9	37.71 .72	6.9 1.0	19.26 .31	50.3 2.6	44.44 .27	57.1 1.9	30.39 1.06	66.0 2.7
30.8	38.46 .76	6.1 0.6	19.59 .33	47.9 2.1	44.72 .29	55.3 1.7	31.57 1.27	63.5 2.2
Feb. 9.8	39.23 .79	5.7 +0.2	19.93 .35	46.0 1.6	45.02 .30	53.8 1.4	32.94 1.44	61.6 1.6
19.8	40.03 +.80	5.7 -0.2	20.28 +.35	44.6 -1.1	45.33 +.31	52.6 -1.0	34.45+1.55	60.2 -1.0
29.8	40.83 .79	6.1 0.6	20.64 .35	43.9 -0.5	45.64 .30	51.7 0.7	36.03 1.59	59.6 -0.3
Mar. 10.7	41.62 .77	6.9 1.0	20.99 .34	43.7 +0.1	45.94 .30	51.2 -0.3	37.63 1.58	59.5 +0.3
20.7	42.38 .74	8.0 1.3	21.32 .32	44.1 0.7	46.23 .29	51.2 +0.1	39.19 1.51	60.2 0.9
30.7	43.10 .70	9.5 1.6	21.64 .30	45.1 1.3	46.51 .27	51.5 0.5	40.65 1.58	61.4 1.5
Apr. 9.6	43.77 +.65	11.3 -1.9	21.92 +.27	46.6 +1.8	46.78 +.25	52.2 +0.8	41.96+1.21	63.2 +2.0
19.6	44.39 .58	13.3 2.1	22.18 .24	48.6 2.2	47.02 .23	53.2 1.1	43.07 1.00	65.5 2.5
29.6	44.94 .51	15.5 2.3	22.41 .20	51.0 2.5	47.24 .21	54.4 1.4	43.96 .75	68.2 2.8
May 9.6	45.42 .43	17.9 2.5	22.59 .16	53.6 2.7	47.44 .18	55.9 1.6	44.58 .49	71.2 3.1
19.5	45.81 .34	20.5 2.6	22.74 .12	56.3 2.8	47.61 .15	57.5 1.7	44.94+ .21	74.3 3.2
29.5	46.11 +.25	23.0 -2.6	22.84 +.08	59.2 +2.9	47.75 +.12	59.3 +1.7	45.01- .07	77.6 +3.2
June 8.5	46.32 .16	25.6 2.6	22.90 +.04	62.1 2.8	47.85 .09	61.0 1.7	44.80 .35	80.8 3.2
18.5	46.42 +.06	28.2 2.5	22.91 -0.01	64.9 2.7	47.92 .05	62.7 1.6	44.31 .62	83.9 3.0
28.4	46.43 -0.04	30.6 2.3	22.89 .05	67.5 2.5	47.96 +.02	64.3 1.5	43.57 .87	86.8 2.8
July 8.4	46.34 .14	32.8 2.1	22.81 .09	69.8 2.2	47.95 -0.02	65.8 1.4	42.58-1.10	89.5 2.5
18.4	46.15 -0.23	34.8 -1.8	22.70 -0.13	71.9 +1.9	47.92 -0.06	67.1 +1.3	41.38-1.30	91.8 +2.1
28.3	45.87 .32	36.4 1.5	22.55 .17	73.6 1.5	47.84 .09	68.3 1.1	39.98 1.47	93.7 1.7
Aug. 7.3	45.52 .39	37.7 1.1	22.36 .20	75.0 1.1	47.74 .12	69.3 0.9	38.43 1.61	95.2 1.2
17.3	45.10 .44	38.6 0.7	22.15 .22	76.0 0.7	47.61 .14	70.0 0.6	36.76 1.72	96.2 0.8
27.3	44.63 .48	39.0 -0.2	21.92 .24	76.5 +0.3	47.46 .16	70.5 0.4	34.99 1.79	96.7 +0.3
Sept. 6.2	44.15 -0.49	38.9 +0.3	21.67 -0.25	76.6 -0.1	47.29 -0.17	70.8 +0.2	33.18-1.82	96.7 -0.2
16.2	43.66 .48	38.4 0.8	21.42 .24	76.2 0.6	47.13 .17	70.8 -0.1	31.36 1.81	96.2 0.6
26.2	43.19 .44	37.4 1.2	21.19 .23	75.4 1.1	46.96 .16	70.6 0.4	29.57 1.75	95.3 1.2
Oct. 6.2	42.77 .39	36.0 1.6	20.97 .21	74.1 1.5	46.81 .14	70.1 0.6	27.85 1.66	93.8 1.7
16.1	42.42 .31	34.1 2.0	20.77 .17	72.4 1.9	46.68 .11	69.4 0.9	26.25 1.52	91.9 2.2
26.1	42.16 -0.21	32.0 +2.3	20.62 -0.13	70.3 -2.3	46.58 -0.08	68.4 -1.1	24.80-1.34	89.5 -2.6
Nov. 5.1	42.00 -0.09	29.6 2.5	20.51 .08	67.8 2.6	46.52 -0.04	67.1 1.4	23.56 1.13	86.7 2.9
15.0	41.97 +0.03	27.0 2.6	20.45 -0.03	65.0 2.9	46.50 +0.01	65.6 1.6	22.55 .87	83.7 3.2
25.0	42.06 .16	24.4 2.6	20.45 +0.03	61.9 3.1	46.53 .06	63.9 1.8	21.81 .60	80.3 3.4
Dec. 5.0	42.28 .28	21.8 2.5	20.51 .09	58.7 3.3	46.61 .11	62.0 2.0	21.36- .30	76.9 3.5
15.0	42.62 +.40	19.4 +2.3	20.63 +.15	55.4 -3.3	46.74 +.15	59.9 -2.1	21.22+ .02	73.3 -3.5
24.9	43.08 .50	17.3 2.0	20.80 .20	52.1 3.3	46.92 .19	57.8 2.1	21.40 .33	69.8 3.4
34.9	43.63 +.60	15.4 +1.7	21.03 +.25	48.9 -3.1	47.13 +.23	55.7 -2.1	21.88+ .63	66.4 -3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>d</i> Herculis.		<i>α</i> Herculis.		<i>δ</i> Ophiuchi.		<i>β</i> Draconis.	
	Right Ascension.	Declination <i>North</i> .	Right Ascension.	Declination <i>North</i> .	Right Ascension.	Declination <i>South</i> .	Right Ascension.	Declination <i>North</i> .
	h m 16 57	° ' +33 42	h m 17 9	° ' +14 30	h m 17 20	° ' -24 4	h m 17 28	° ' +52 22
Jan. 0.9	44.89 +.21	53.6 -3.1	53.44 +.20	20.4 -2.3	0.19 +.23	52.9 -0.2	3.17 +.17	27.6 -3.5
10.9	45.12 .25	50.7 2.9	53.66 .23	18.1 2.2	0.44 .27	53.1 0.3	3.37 .24	24.1 3.3
20.9	45.39 .28	47.9 2.6	53.91 .26	15.9 2.1	0.73 .30	53.5 0.4	3.64 .29	21.0 3.0
30.9	45.69 .31	45.5 2.2	54.18 .28	14.0 1.8	1.03 .32	53.9 0.4	3.96 .34	18.2 2.6
Feb. 9.8	46.01 .32	43.5 1.7	54.47 .30	12.3 1.5	1.36 .33	54.3 0.4	4.32 .37	15.8 2.1
19.8	46.34 +.33	42.1 -1.2	54.77 +.30	11.0 -1.1	1.70 +.34	54.8 -0.4	4.71 +.40	14.0 -1.5
29.8	46.68 .33	41.2 0.6	55.08 .31	10.1 0.7	2.04 .34	55.2 0.4	5.12 .41	12.8 0.9
Mar. 10.8	47.01 .33	40.8 -0.1	55.39 .30	9.6 -0.2	2.38 .34	55.6 0.3	5.53 .41	12.3 -0.2
20.7	47.33 .32	41.0 +0.5	55.69 .29	9.6 +0.2	2.71 .33	55.9 0.3	5.95 .41	12.4 +0.4
30.7	47.64 .30	41.8 1.0	55.98 .28	10.0 0.6	3.04 .32	56.1 0.2	6.35 .39	13.2 1.0
Apr. 9.7	47.93 +.28	43.1 +1.5	56.25 +.27	10.8 +1.0	3.35 +.31	56.3 -0.2	6.73 +.36	14.6 +1.6
19.6	48.20 .25	44.9 1.9	56.51 .25	12.0 1.3	3.65 .29	56.4 0.1	7.07 .33	16.5 2.1
29.6	48.43 .22	47.0 2.3	56.74 .22	13.5 1.6	3.93 .27	56.5 0.1	7.38 .29	18.9 2.6
May 9.6	48.63 .19	49.5 2.5	56.95 .20	15.2 1.8	4.18 .24	56.6 0.1	7.65 .24	21.6 2.9
19.6	48.80 .15	52.1 2.7	57.13 .17	17.1 1.9	4.41 .21	56.7 0.1	7.86 .19	24.6 3.1
29.5	48.93 +.11	54.8 +2.7	57.28 +.13	19.0 +2.0	4.61 +.18	56.7 -0.1	8.03 +.13	27.9 +3.3
June 8.5	49.01 .07	57.6 2.7	57.40 .10	21.1 2.0	4.77 .15	56.8 0.1	8.13 .07	31.1 3.3
18.5	49.06 +.02	60.3 2.6	57.48 .06	23.1 2.0	4.90 .11	56.9 0.1	8.17 +.01	34.4 3.2
28.4	49.06 -0.2	62.9 2.5	57.53 +0.3	25.0 1.9	4.99 .06	57.0 0.1	8.16 -0.5	37.6 3.1
July 8.4	49.02 .0	65.2 2.3	57.53 -0.1	26.8 1.7	5.03 +.02	57.1 0.1	8.08 .10	40.5 2.8
18.4	48.94 -0.10	67.4 +2.0	57.50 -0.5	28.4 +1.5	5.03 -0.2	57.3 -0.1	7.95 -0.16	43.2 +2.5
28.4	48.82 .14	69.2 1.7	57.43 .08	29.8 1.3	4.99 .06	57.4 0.1	7.76 .21	45.6 2.2
Aug. 7.3	48.67 .17	70.7 1.3	57.33 .12	31.0 1.1	4.91 .10	57.5 -0.1	7.53 .26	47.6 1.8
17.3	48.48 .20	71.8 0.9	57.20 .14	31.9 0.8	4.80 .13	57.5 0.0	7.25 .29	49.2 1.4
27.3	48.28 .21	72.5 0.5	57.05 .	32. 0.5	4.65 .15	57.5 0.0	6.94 .32	50.4 0.9
Sept. 6.3	48.05 -0.22	72.8 +0.1	56.88 -0.17	32.9 +0.2	4.49 -0.17	57.5 +0.1	6.61 -0.34	51.0 +0.4
16.2	47.83 .22	72.7 -0.3	56.70 .18	33.0 -0.1	4.32 .17	57.3 0.2	6.26 .35	51.1 -0.1
26.2	47.60 .22	72.1 0.8	56.52 .17	32.8 0.4	4.15 .17	57.1 0.2	5.91 .34	50.8 0.6
Oct. 6.2	47.39 .20	71.1 1.2	56.36 .16	32.3 0.7	3.98 .15	56.8 0.3	5.57 .33	49.9 1.1
16.1	47.21 .17	69.7 1.6	56.21 .15	31.5 1.	3.84 .12	56.5 0.3	5.26 .30	48.5 1.6
26.1	47.06 -0.13	67.9 -2.0	56.09 -0.10	30.4 -1.3	3.73 -0.09	56.2 +0.3	4.98 -0.26	46.7 -2.1
Nov. 5.1	46.95 .09	65.7 2.3	56.01 .06	29.0 1.5	3.67 -0.05	55.8 0.3	4.74 .21	44.4 2.5
15.1	46.88 -0.04	63.2 2.6	55.98 -0.01	27.3 1.8	3.64 .00	55.5 0.3	4.57 .15	41.7 2.9
25.0	46.88 +0.02	60.5 2.8	55.99 +0.03	25.4 2.0	3.67 +0.06	55.2 0.2	4.45 .08	38.7 3.2
Dec. 5.0	46.92 .07	57.5 3.0	56.05 .08	23.3 2.2	3.75 .11	55.1 +0.1	4.41 -0.01	35.4 3.4
15.0	47.02 +.13	54.4 -3.1	56.15 +.13	21.0 -2.3	3.89 +.16	55.0 0.0	4.44 +0.06	31.9 -3.5
25.0	47.18 .18	51.3 3.1	56.31 .17	18.7 2.3	4.07 .20	55.1 -0.1	4.53 .13	28.3 3.5
34.9	47.38 +.22	48.2 -3.0	56.50 +.21	16.4 -2.3	4.30 +.24	55.3 -0.2	4.70 +.19	24.9 -3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ophiuchi.		ω Draconis.		μ Herculis.		ψ Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 17 30	° ' +12 37	h m 17 37	° ' +68 47	h m 17 42	° ' +27 46	h m 17 43	° ' +72 11
	s	"	s	"	s	"	s	"
Jan. 1.0	5.49 +.18	57.8 -2.2	30.14 +.17	67.7 -3.7	22.20 +.16	41.4 -2.9	42.85 +.16	45.9 -3.6
10.9	5.69 .22	55.6 2.1	30.37 .28	64.2 3.4	22.38 .20	38.5 2.7	43.08 .29	42.3 3.4
20.9	5.92 .25	53.5 2.0	30.70 .38	60.9 3.1	22.60 .24	35.9 2.5	43.43 .41	39.0 3.1
30.9	6.18 .27	51.6 1.8	31.13 .47	58.0 2.7	22.86 .27	33.4 2.2	43.90 .52	36.1 2.7
Feb. 9.8	6.47 .29	50.0 1.5	31.65 .54	55.6 2.2	23.14 .29	31.4 1.8	44.48 .61	33.6 2.2
19.8	6.76 +.30	48.7 -1.1	32.22 +.59	53.7 -1.6	23.43 +.31	29.7 -1.4	45.13 +.68	31.6 -1.7
29.8	7.06 .30	47.8 0.7	32.84 .63	52.4 0.9	23.75 .31	28.6 0.9	45.83 .72	30.3 1.0
Mar. 10.8	7.37 .30	47.3 -0.3	33.48 .64	51.8 -0.3	24.06 .32	28.0 -0.4	46.57 .74	29.6 -0.3
20.7	7.67 .30	47.2 +0.1	34.12 .63	51.9 +0.4	24.38 .31	27.9 +0.2	47.32 .74	29.6 +0.3
30.7	7.96 .29	47.5 0.5	34.75 .61	52.6 1.1	24.69 .30	28.3 0.7	48.05 .71	30.2 1.0
Apr. 9.7	8.24 +.28	48.3 +0.9	35.34 +.56	54.0 +1.7	24.99 +.29	29.3 +1.2	48.74 +.66	31.5 +1.6
19.7	8.51 .26	49.3 1.2	35.87 .50	56.0 2.2	25.27 .27	30.7 1.6	49.37 .59	33.4 2.1
29.6	8.76 .24	50.7 1.5	36.34 .43	58.4 2.6	25.54 .25	32.5 2.0	49.92 .50	35.8 2.6
May 9.6	8.98 .21	52.4 1.7	36.73 .34	61.2 3.0	25.77 .22	34.6 2.3	50.38 .40	38.5 2.9
19.6	9.19 .18	54.2 1.9	37.03 .25	64.4 3.2	25.98 .19	37.0 2.5	50.73 .29	41.6 3.2
29.6	9.36 +.15	56.1 +2.0	37.24 +.15	67.7 +3.4	26.16 +.16	39.6 +2.6	50.97 +.18	44.9 +3.3
June 8.5	9.49 .12	58.1 2.0	37.34 +.05	71.1 3.4	26.30 .12	42.2 2.6	51.08 +.06	48.3 3.4
18.5	9.60 .08	60.1 1.9	37.34 -.05	74.5 3.4	26.40 .08	44.9 2.6	51.07 -.06	51.7 3.3
28.5	9.66 .05	62.0 1.8	37.23 .15	77.8 3.2	26.45 +.04	47.5 2.5	50.94 .19	55.0 3.2
July 8.4	9.69 +.01	63.8 1.7	37.03 .25	80.9 3.0	26.47 -.01	49.9 2.3	50.70 .30	58.1 3.0
18.4	9.67 -.03	65.4 +1.5	36.73 -.34	83.8 +2.7	26.44 -.05	52.1 +2.1	50.34 -.41	61.0 +2.7
28.4	9.62 .07	66.9 1.3	36.35 .42	86.4 2.4	26.37 .09	54.1 1.9	49.88 .51	63.6 2.4
Aug. 7.4	9.53 .10	68.1 1.1	35.89 .49	88.5 1.9	26.26 .13	55.9 1.6	49.32 .59	65.8 2.0
17.3	9.42 .13	69.1 0.9	35.36 .55	90.2 1.5	26.11 .16	57.3 1.2	48.69 .67	67.6 1.6
27.3	9.27 .15	69.8 0.6	34.78 .60	91.5 1.0	25.94 .18	58.3 0.9	47.99 .72	68.9 1.2
Sept. 6.3	9.11 -.17	70.3 +0.3	34.16 -.63	92.3 +0.5	25.74 -.20	59.0 +0.5	47.24 -.76	69.8 +0.6
16.2	8.93 .18	70.5 0.0	33.52 .64	92.5 0.0	25.54 .21	59.3 +0.1	46.47 .78	70.1 +0.1
26.2	8.75 .17	70.4 -0.2	32.87 .64	92.3 -0.5	25.32 .21	59.2 -0.3	45.69 .77	69.9 -0.5
Oct. 6.2	8.59 .16	70.0 0.5	32.23 .62	91.5 1.1	25.12 .20	58.7 0.7	44.92 .75	69.2 1.0
16.2	8.43 .14	69.3 0.8	31.63 .58	90.1 1.6	24.93 .18	57.8 1.1	44.18 .71	68.0 1.5
26.1	8.31 -.11	68.3 -1.1	31.08 -.52	88.3 -2.1	24.76 -.15	56.5 -1.5	43.51 -.64	66.2 -2.0
Nov. 5.1	8.21 .07	67.1 1.4	30.59 .44	86.0 2.5	24.63 .11	54.8 1.9	42.90 .56	64.0 2.4
15.1	8.16 -.03	65.6 1.6	30.19 .35	83.3 2.9	24.54 .07	52.8 2.2	42.39 .45	61.3 2.8
25.1	8.16 +.02	63.9 1.8	29.89 .25	80.3 3.2	24.50 -.02	50.5 2.4	41.99 .34	58.3 3.2
Dec. 5.0	8.20 .07	62.0 2.0	29.69 .14	76.9 3.4	24.51 +.03	47.9 2.6	41.72 .21	55.0 3.4
15.0	8.29 +.11	59.9 -2.1	29.61 -.02	73.4 -3.6	24.57 +.08	45.2 -2.8	41.58 -.07	51.5 -3.6
25.0	8.43 .15	57.7 2.2	29.65 +.10	69.8 3.6	24.67 .13	42.3 2.8	41.58 +.07	47.9 3.6
35.0	8.60 +.19	55.5 -2.2	29.80 +.21	66.2 -3.6	24.83 +.18	39.5 -2.8	41.72 +.21	44.3 -3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis.		γ^2 Sagittarii.		μ Sagittarii.		η Serpentis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 17 54	° ' +51 29	h m 17 59	° ' -30 25	h m 18 7	° ' -21 5	h m 18 15	° ' - 2 55
	s "	"	s "	"	s "	"	s "	"
Jan. 1.0	9.54 +.13	51.7 -3.5	6.60 +.20	38.3 +0.3	31.70 +.18	17.3 -0.2	54.79 +.15	40.5 -1.2
11.0	9.71 .20	48.2 3.5	6.83 .24	38.0 0.3	31.90 .22	17.5 0.2	54.97 .19	41.8 1.2
20.9	9.94 .26	45.0 3.1	7.09 .28	37.8 0.2	32.14 .25	17.7 0.2	55.17 .22	43.0 1.2
30.9	10.22 .30	42.0 2.7	7.39 .31	37.6 0.2	32.41 .28	18.0 0.2	55.40 .25	44.1 1.1
Feb. 9.9	10.55 .34	39.5 2.3	7.70 .33	37.4 0.1	32.69 .30	18.2 0.2	55.66 .27	45.1 0.9
19.8	10.91 +.38	37.5 -1.7	8.04 +.34	37.4 +0.1	33.00 +.31	18.3 -0.1	55.94 +.28	45.9 -0.7
29.8	11.30 .40	36.1 1.1	8.39 .35	37.3 0.0	33.32 .32	18.4 -0.1	56.22 .29	46.5 0.4
Mar. 10.8	11.71 .40	35.3 -0.5	8.74 .35	37.3 0.0	33.64 .33	18.5 0.0	56.52 .29	46.8 -0.2
20.8	12.11 .40	35.1 +0.2	9.10 .35	37.2 0.0	33.97 .33	18.4 +0.1	56.82 .30	46.9 +0.1
30.7	12.52 .40	35.6 0.8	9.45 .35	37.2 0.0	34.30 .33	18.3 0.2	57.12 .30	46.6 0.4
Apr. 9.7	12.90 +.38	36.8 +1.4	9.80 +.34	37.2 0.0	34.62 +.32	18.0 +0.2	57.42 +.29	46.1 +0.6
19.7	13.27 .35	38.4 1.9	10.13 .33	37.2 0.0	34.94 .31	17.7 0.3	57.71 .28	45.4 0.8
29.6	13.60 .31	40.6 2.4	10.45 .31	37.3 -0.1	35.24 .29	17.4 0.4	57.99 .27	44.4 1.0
May 9.6	13.90 .27	43.3 2.8	10.76 .29	37.4 0.1	35.53 .27	17.0 0.4	58.25 .25	43.3 1.2
19.6	14.14 .22	46.2 3.1	11.03 .26	37.5 0.2	35.79 .25	16.6 0.4	58.50 .23	42.1 1.2
29.6	14.34 +.17	49.4 +3.2	11.28 +.23	37.7 -0.2	36.02 +.22	16.3 +0.3	58.72 +.20	40.8 +1.3
June 8.5	14.49 .11	52.7 3.3	11.49 .19	38.0 0.3	36.23 .19	16.0 0.3	58.91 .17	39.5 1.3
18.5	14.57 +0.5	56.0 3.3	11.67 .15	38.3 0.3	36.40 .15	15.7 0.2	59.06 .14	38.2 1.3
28.5	14.59 -0.1	59.3 3.2	11.80 .11	38.7 0.4	36.53 .11	15.5 0.1	59.18 .10	36.9 1.2
July 8.4	14.56 .07	62.4 3.0	11.88 .06	39.1 0.4	36.61 .07	15.4 +0.1	59.26 .06	35.8 1.1
18.4	14.46 -0.12	65.3 +2.8	11.92 +0.1	39.6 -0.5	36.66 +0.2	15.4 0.0	59.30 +0.2	34.7 +1.0
28.4	14.31 .18	67.9 2.5	11.91 -0.3	40.1 0.5	36.65 -0.2	15.3 0.0	59.30 -0.2	33.8 0.9
Aug. 7.4	14.11 .23	70.2 2.1	11.85 .08	40.5 0.4	36.61 .06	15.4 0.0	59.25 .06	33.0 0.7
17.3	13.86 .27	72.1 1.7	11.75 .12	40.9 0.4	36.53 .10	15.4 -0.1	59.17 .10	32.4 0.6
27.3	13.57 .30	73.6 1.2	11.62 .15	41.2 0.3	36.41 .13	15.5 -0.1	59.06 .13	31.9 0.4
Sept. 6.3	13.25 -0.33	74.5 +0.7	11.46 -0.17	41.4 -0.2	36.26 -0.16	15.5 0.0	58.92 -0.15	31.5 +0.3
16.3	12.92 .34	75.0 +0.3	11.28 .18	41.5 0.0	36.10 .17	15.5 0.0	58.76 .16	31.3 +0.1
26.2	12.57 .34	75.0 -0.3	11.09 .18	41.5 +0.1	35.92 .17	15.5 0.0	58.60 .16	31.3 0.0
Oct. 6.2	12.24 .33	74.5 0.8	10.91 .18	41.3 0.2	35.75 .16	15.5 +0.1	58.43 .16	31.4 -0.2
16.2	11.91 .31	73.5 1.3	10.74 .16	41.0 0.3	35.60 .15	15.4 0.1	58.28 .15	31.6 0.3
26.2	11.62 -0.27	72.0 -1.8	10.60 -0.12	40.6 +0.4	35.46 -0.12	15.2 +0.1	58.14 -0.12	32.0 -0.5
Nov. 5.1	11.37 .23	70.0 2.2	10.49 .08	40.1 0.5	35.36 .08	15.1 0.1	58.04 .09	32.5 0.6
15.1	11.17 .17	67.6 2.6	10.43 .04	39.5 0.6	35.30 -0.04	15.0 0.1	57.96 .05	33.2 0.8
25.1	11.02 .11	64.8 3.0	10.42 +0.2	38.9 0.6	35.28 +0.01	14.9 +0.1	57.93 -0.01	34.0 0.9
Dec. 5.0	10.95 -0.04	61.7 3.2	10.46 .07	38.3 0.6	35.32 .06	14.8 0.0	57.95 +0.04	35.0 1.0
15.0	10.94 +0.2	58.3 -3.4	10.56 +1.2	37.8 +0.5	35.40 +0.11	14.8 0.0	58.01 +0.2	36.1 -1.1
25.0	10.99 .09	54.9 3.5	10.71 .17	37.3 0.5	35.53 .15	14.9 -0.1	58.11 .12	37.2 1.2
35.0	11.12 +0.15	51.4 -3.5	10.90 +0.21	36.9 +0.3	35.70 +0.19	15.0 0.2	58.26 +0.16	38.5 -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Lyræ. (Vega.)		β Lyræ.		σ Sagittarii.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h ^m 18 29	[°] ['] — 8 19	^h ^m 18 33	[°] ['] +38 40	^h ^m 18 46	[°] ['] +33 14	^h ^m 18 48	[°] ['] —26 25
	^s	["]	^s	["]	^s	["]	^s	["]
Jan. 1.0	31.97 +.14	9.3 —0.9	23.55 +.10	63.5 —3.1	13.05 +.09	22.4 —2.9	48.08 +.14	41.6 +0.3
11.0	32.14 .18	10.1 0.9	23.67 .14	60.4 3.0	13.16 .13	19.5 2.9	48.24 .18	41.3 0.3
20.9	32.33 .21	11.0 0.8	23.84 .19	57.4 2.9	13.32 .18	16.7 2.7	48.45 .22	41.0 0.3
30.9	32.56 .24	11.8 0.7	24.05 .23	54.6 2.6	13.51 .22	14.0 2.5	48.69 .25	40.6 0.3
Feb. 9.9	32.82 .26	12.5 0.6	24.30 .27	52.1 2.3	13.75 .25	11.7 2.2	48.95 .28	40.3 0.3
19.9	33.09 +.28	13.0 —0.5	24.59 +.30	50.1 —1.8	14.01 +.28	9.7 —1.8	49.24 +.30	40.0 +0.4
29.8	33.37 .29	13.4 —0.5	24.89 .32	48.5 1.3	14.30 .30	8.1 1.3	49.55 .32	39.6 0.4
Mar. 10.8	33.67 .30	13.5 0.0	25.22 .33	47.5 0.7	14.61 .31	7.1 0.7	49.88 .33	39.2 0.4
20.8	33.98 .31	13.5 +0.2	25.56 .34	47.0 —0.1	14.92 .32	6.6 —0.2	50.21 .34	38.8 0.3
30.8	34.28 .31	13.2 0.4	25.91 .34	47.2 +0.5	15.25 .33	6.8 +0.4	50.55 .34	38.3 0.5
Apr. 9.7	34.59 +.30	12.7 +0.6	26.25 +.34	47.9 +1.1	15.58 +.33	7.4 +0.9	50.89 +.34	37.8 +0.5
19.7	34.89 .30	12.0 0.8	26.58 .32	49.3 1.6	15.90 .32	8.6 1.4	51.23 .34	37.3 0.5
29.7	35.18 .29	11.1 0.9	26.90 .30	51.1 2.0	16.21 .30	10.3 1.9	51.56 .33	36.8 0.5
May 9.6	35.46 .27	10.2 1.0	27.19 .28	53.3 2.4	16.51 .28	12.4 2.3	51.88 .31	36.3 0.4
19.6	35.72 .25	9.1 1.1	27.46 .25	55.9 2.7	16.77 .25	14.8 2.7	52.19 .29	35.9 0.4
29.6	35.96 +.22	8.0 +1.1	27.69 +.21	58.8 +2.9	17.01 +.22	17.5 +2.8	52.47 +.26	35.6 +0.3
June 8.6	36.16 .19	6.9 1.1	27.88 .17	61.8 3.1	17.22 .18	20.4 2.9	52.72 .23	35.3 0.2
18.5	36.34 .15	5.8 1.0	28.03 .12	65.0 3.1	17.38 .14	23.3 3.0	52.93 .19	35.2 +0.1
28.5	36.48 .12	4.8 0.9	28.13 .07	68.1 3.1	17.50 .10	26.4 2.9	53.11 .15	35.2 0.0
July 8.5	36.58 .08	3.9 0.8	28.18 +.02	71.1 3.0	17.57 +.05	29.3 2.8	53.24 .11	35.3 —0.1
18.5	36.63 +.03	3.1 +0.7	28.18 —0.3	74.0 +2.8	17.59 .00	32.1 +2.7	53.32 +.06	35.5 —0.2
28.4	36.64 —.01	2.5 0.6	28.12 .08	76.7 2.6	17.57 —.05	34.7 2.5	53.36 +.01	35.7 0.3
Aug. 7.4	36.61 .05	1.9 0.5	28.03 .12	79.1 2.3	17.50 .09	37.0 2.2	53.35 —.03	36.0 0.3
17.4	36.54 .08	1.4 0.4	27.88 .16	81.2 1.9	17.38 .13	39.1 1.9	53.29 .08	36.4 0.4
27.3	36.44 .12	1.1 0.3	27.70 .20	83.0 1.5	17.23 .17	40.8 1.5	53.19 .12	36.7 0.3
Sept. 6.3	36.31 —.14	0.9 +0.2	27.49 —.23	84.3 +1.1	17.05 —.20	42.2 +1.1	53.06 —.15	37.1 —0.3
16.3	36.16 .16	0.7 +0.1	27.25 .24	85.2 0.7	16.84 .22	43.1 0.7	52.90 .17	37.3 0.2
26.3	35.99 .16	0.7 0.0	27.00 .25	85.7 +0.2	16.61 .23	43.7 +0.3	52.73 .18	37.5 0.1
Oct. 6.2	35.83 .16	0.8 —0.1	26.74 .25	85.7 —0.2	16.39 .23	43.8 —0.1	52.55 .18	37.6 —0.1
16.2	35.67 .15	0.9 0.2	26.50 .24	85.2 0.7	16.16 .22	43.4 0.5	52.37 .17	37.6 0.0
26.2	35.53 —.12	1.1 —0.3	26.27 —.21	84.3 —1.2	15.95 —.20	42.7 —1.0	52.22 —.14	37.5 +0.1
Nov. 5.2	35.42 .09	1.5 0.4	26.07 .18	82.9 1.6	15.77 .17	41.5 1.4	52.09 .11	37.3 0.2
15.1	35.35 .06	1.9 0.5	25.91 .14	81.1 2.0	15.62 .13	39.9 1.8	51.99 .07	37.1 0.3
25.1	35.31 —.01	2.4 0.6	25.79 .10	78.9 2.4	15.50 .09	37.9 2.1	51.94 —.03	36.8 0.3
Dec. 5.1	35.32 +.03	3.1 0.7	25.72 —.04	76.3 2.7	15.44 —.04	35.6 2.4	51.93 +.02	36.4 0.4
15.0	35.37 +.07	3.8 —0.8	25.70 +.01	73.5 —2.9	15.42 +.01	33.0 —2.7	51.97 +.07	36.0 +0.4
25.0	35.47 .12	4.6 0.8	25.73 .06	70.5 3.0	15.45 .06	30.2 2.8	52.06 .11	35.7 0.4
35.0	35.60 +.16	5.5 —0.9	25.82 +.11	67.4 —3.1	15.53 +.10	27.4 —2.9	52.20 +.15	35.3 +0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	50 Draconis.		σ Octantis.		ζ Aquilæ.		δ Sagittarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 18 ^m 49	[°] +75 ['] 18	^h 18	[°] --89 ['] 15	^h 19 ^m 0	[°] +13 ['] 42	^h 19 ^m 11	[°] -19 ['] 8
	^s	["]	^m ^s	["]	^s	["]	^s	["]
Jan. 1.0	37.53 -10	33.9 -3.4	51 32.2+ 3.9	44.7 +3.5	36.78 +.09	24.2 -2.0	32.14 +.11	25.2 0.0
11.0	37.53 +.08	30.4 3.4	51 37.6 6.9	41.2 3.3	36.90 .13	22.2 2.0	32.27 .15	25.2 0.0
20.9	37.69 .25	27.0 3.4	51 46.1 9.9	37.9 3.2	37.05 .17	20.2 1.9	32.44 .19	25.2 0.0
30.9	38.02 .40	23.7 3.1	51 57.3 12.5	34.9 2.9	37.23 .20	18.4 1.7	32.65 .22	25.2 0.0
Feb. 9.9	38.49 .54	20.7 2.8	52 11.1 14.8	32.1 2.6	37.44 .23	16.8 1.5	32.88 .25	25.2 +0.1
19.9	39.10 +.66	18.2 -2.3	52 27.0+16.7	29.6 +2.2	37.68 +.25	15.4 -1.2	33.14 +.27	25.0 +0.2
29.9	39.81 .76	16.1 .1.8	52 44.5 18.2	27.6 1.8	37.94 .27	14.3 0.8	33.41 .29	24.8 0.3
Mar. 10.8	40.61 .84	14.6 1.2	53 3.3 19.2	26.0 1.4	38.22 .28	13.7 -0.4	33.71 .30	24.4 0.4
20.8	41.47 .87	13.8 -0.5	53 22.9 19.8	24.9 0.9	38.51 .29	13.5 0.0	34.02 .31	23.9 0.5
30.8	42.35 .88	13.6 +0.1	53 42.9 20.0	24.2 +0.4	38.81 .30	13.7 +0.4	34.34 .32	23.3 0.6
Apr. 9.7	43.22 +.86	14.1 +0.8	54 3.0+19.8	24.1 -0.1	39.11 +.30	14.3 +0.8	34.66 +.32	22.6 +0.7
19.7	44.07 .82	15.2 1.4	54 22.6 19.2	24.4 0.6	39.41 .30	15.3 1.2	34.98 .32	21.8 0.8
29.7	44.85 .74	16.9 2.0	54 41.4 18.2	25.2 1.0	39.71 .29	16.7 1.5	35.31 .32	21.0 0.8
May 9.7	45.56 .65	19.1 2.4	54 59.0 16.9	26.5 1.5	39.99 .28	18.3 1.8	35.62 .31	20.2 0.8
19.6	46.16 .54	21.8 2.8	55 15.1 15.1	28.2 1.8	40.26 .26	20.3 2.0	35.92 .29	19.3 0.8
29.6	46.64 +.41	24.8 +3.1	55 29.3+13.1	30.2 -2.2	40.50 +.23	22.4 +2.2	36.20 +.27	18.5 +0.8
June 8.6	46.98 .28	28.0 3.3	55 41.3 10.7	32.6 2.5	40.72 .20	24.6 2.2	36.46 .24	17.7 0.7
18.6	47.19 +.13	31.5 3.5	55 50.8 8.1	35.2 2.7	40.90 .17	26.9 2.3	36.68 .21	17.1 0.6
28.5	47.25 -0.02	35.0 3.5	55 57.6 5.4	38.0 2.9	41.05 .13	29.1 2.2	36.87 .17	16.6 0.5
July 8.5	47.16 .16	38.5 3.4	56 1.5+ 2.4	41.0 3.0	41.16 .09	31.3 2.1	37.01 .18	16.1 0.4
18.5	46.92 -3.1	41.8 +3.3	56 2.4- 0.6	44.0 -2.9	41.22 +.04	33.4 +2.0	37.11 +.08	15.8 +0.2
28.4	46.54 .44	45.0 3.1	56 0.4 3.5	46.9 2.8	41.24 .00	35.3 1.8	37.17 +.03	15.7 +0.1
Aug. 7.4	46.03 .57	48.0 2.8	55 55.4 6.4	49.7 2.6	41.22 -0.04	36.9 1.6	37.18 -0.01	15.6 0.0
17.4	45.41 .68	50.6 2.5	55 47.5 9.1	52.2 2.3	41.15 .08	38.4 1.3	37.14 .06	15.6 -0.1
27.4	44.67 .78	52.9 2.1	55 37.2 11.4	54.4 2.0	41.05 .12	39.6 1.1	37.06 .10	15.7 0.1
Sept. 6.3	43.85 -8.5	54.7 +1.6	55 24.8-13.3	56.1 -1.5	40.92 -1.14	40.6 +0.8	36.95 -1.13	15.9 -0.2
16.3	42.97 .91	56.1 1.1	55 10.6 14.8	57.4 1.0	40.77 .16	41.3 0.5	36.81 .15	16.0 0.2
26.3	42.04 .94	57.0 0.6	54 55.2 15.7	58.1 -0.4	40.60 .17	41.7 +0.2	36.65 .16	16.2 0.2
Oct. 6.2	41.09 .95	57.4 +0.1	54 39.2 15.9	58.2 +0.2	40.42 .18	41.8 0.0	36.49 .17	16.4 0.2
16.2	40.14 .94	57.2 -0.4	54 23.3 15.5	57.7 0.8	40.24 .17	41.6 -0.3	36.32 .16	16.5 0.1
26.2	39.22 -9.0	56.6 -1.0	54 8.1-14.5	56.6 +1.4	40.08 -1.15	41.1 -0.6	36.16 -1.14	16.6 -0.1
Nov. 5.2	38.35 .83	55.3 1.5	53 54.3 12.8	54.9 1.9	39.94 .13	40.3 0.9	36.03 .12	16.7 0.1
15.1	37.56 .74	53.6 2.0	53 42.4 10.6	52.7 2.4	39.83 .10	39.2 1.2	35.93 .09	16.7 0.1
25.1	36.87 .63	51.3 2.5	53 33.0 8.0	50.0 2.8	39.75 .06	37.9 1.4	35.86 -0.05	16.8 -0.1
Dec. 5.1	36.31 .49	48.7 2.8	53 26.4 5.0	47.0 3.2	39.71 -0.02	36.3 1.7	35.84 .00	16.8 0.0
15.1	35.89 -3.5	45.7 -3.1	53 23.0- 1.8	43.7 +3.4	39.71 +.02	34.6 -1.8	35.86 +.04	16.8 0.0
25.0	35.62 .19	42.4 3.3	53 22.8+ 1.5	40.3 3.5	39.76 .07	32.7 1.9	35.92 .08	16.9 0.0
35.0	35.51 -0.1	39.0 -3.4	53 26.0+ 4.8	36.8 +3.5	39.85 +.10	30.7 -2.0	36.02 +.12	16.9 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Draconis.		γ Draconis.		δ Aquilæ.		κ Aquilæ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 19 12	° ' " +67 28	h m 19 17	° ' " +73 9	h m 19 20	° ' " + 2 54	h m 19 31	° ' " - 7 15
Jan. 1.0	28.01 -07	38.4 -3.4	27.94 -15	40.8 -3.3	14.37 +08	19.2 -1.3	16.94 +08	38.9 -0.7
11.0	28.00 +04	35.0 3.5	27.87 -01	37.3 3.4	14.47 -12	17.8 1.3	17.04 -12	39.6 0.7
21.0	28.09 -15	31.5 3.4	27.94 +14	33.9 3.4	14.61 -16	16.5 1.3	17.18 -15	40.3 0.6
30.9	28.29 -25	28.2 3.8	28.15 -28	30.5 3.2	14.79 -19	15.3 1.2	17.35 -18	40.9 0.6
Feb. 9.9	28.59 -35	25.1 2.9	28.50 -41	27.4 2.9	14.99 -22	14.2 1.0	17.55 -21	41.4 0.4
19.9	28.99 +43	22.3 -2.5	28.96 +52	24.6 -2.5	15.22 +24	13.3 -0.7	17.77 +23	41.8 -0.2
29.9	29.45 -50	20.1 2.0	29.54 -62	22.3 2.0	15.47 -26	12.7 0.5	18.02 -25	41.9 0.0
Mar. 10.8	29.98 -55	18.4 1.4	30.20 -70	20.6 1.5	15.73 -27	12.4 -0.2	18.29 -27	41.9 +0.2
20.8	30.55 -59	17.3 0.7	30.93 -75	19.4 0.9	16.01 -28	12.4 +0.2	18.57 -29	41.6 0.4
30.8	31.16 -61	16.9 -0.1	31.70 -77	18.9 -0.2	16.31 -29	12.8 0.5	18.87 -30	41.1 0.6
Apr. 9.8	31.77 +61	17.2 +0.6	32.48 +76	19.0 +0.5	16.61 +30	13.4 +0.8	19.17 +31	40.3 +0.9
19.7	32.37 -59	18.1 1.2	33.25 -75	19.8 1.1	16.91 -30	14.4 1.1	19.48 -31	39.4 1.1
29.7	32.95 -55	19.6 1.8	33.99 -71	21.2 1.7	17.21 -30	15.6 1.4	19.79 -31	38.2 1.2
May 9.7	33.48 -50	21.6 2.3	34.67 -64	23.1 2.2	17.50 -29	17.1 1.6	20.09 -30	37.0 1.3
19.6	33.96 -44	24.1 2.7	35.27 -56	25.6 2.6	17.78 -27	18.7 1.7	20.39 -29	35.6 1.4
June 29.6	34.36 +57	27.0 +3.1	35.78 +45	28.4 +3.0	18.05 +25	20.4 +1.8	20.66 +27	34.2 +1.4
8.6	34.69 -29	30.3 3.3	36.18 -34	31.6 3.3	18.28 -22	22.3 1.8	20.92 -24	32.8 1.4
18.6	34.92 -19	33.7 3.5	36.46 -22	35.0 3.5	18.49 -19	24.1 1.8	21.14 -21	31.4 1.5
28.5	35.06 +09	37.3 3.6	36.62 +09	38.5 3.6	18.66 -16	25.9 1.7	21.33 -17	30.2 1.2
July 8.5	35.10 -01	40.8 3.6	36.65 -04	42.1 3.6	18.80 -12	27.5 1.6	21.48 -13	29.0 1.1
18.5	35.04 -11	44.4 +3.5	36.54 -17	45.6 +3.5	18.89 +07	29.1 +1.5	21.59 +09	27.9 +1.0
28.5	34.89 -20	47.8 3.3	36.31 -29	49.1 3.3	18.94 +03	30.5 1.3	21.66 +04	27.1 0.8
Aug. 7.4	34.64 -29	50.9 3.0	35.96 -41	52.3 3.1	18.95 -01	31.8 1.2	21.68 -00	26.3 0.7
17.4	34.30 -38	53.8 2.7	35.49 -51	55.2 2.8	18.91 -06	32.9 1.0	21.66 -04	25.7 0.5
27.4	33.89 -45	56.3 2.5	34.93 -60	57.8 2.4	18.83 -09	33.8 0.8	21.60 -08	25.3 0.4
Sept. 6.3	33.41 -51	58.5 +1.9	34.28 -69	60.0 +2.0	18.73 -12	34.4 +0.6	21.50 -11	25.0 +0.2
16.3	32.87 -55	60.2 1.5	33.55 -75	61.8 1.6	18.59 -14	34.9 0.4	21.37 -14	24.8 +0.1
26.3	32.30 -58	61.4 1.0	32.78 -79	63.2 1.1	18.44 -16	35.2 +0.2	21.22 -15	24.8 0.0
Oct. 6.3	31.71 -60	62.1 +0.4	31.98 -81	64.0 +0.6	18.27 -16	35.2 0.0	21.07 -16	24.8 -0.1
16.2	31.11 -59	62.2 -0.1	31.16 -81	64.3 0.0	18.11 -16	35.1 -0.1	20.91 -15	25.0 0.2
Nov. 26.2	30.52 -57	61.8 -0.7	30.35 -79	64.0 -0.5	17.96 -14	34.8 -0.4	20.76 -14	25.3 -0.3
5.2	29.97 -53	60.9 1.2	29.58 -74	63.2 1.1	17.82 -12	34.2 0.6	20.62 -12	25.6 0.4
15.2	29.46 -48	59.4 1.7	28.87 -68	61.8 1.6	17.71 -09	33.6 0.8	20.51 -09	26.0 0.5
25.1	29.01 -40	57.4 2.2	28.23 -59	59.9 2.1	17.64 -06	32.7 1.0	20.43 -06	26.5 0.5
Dec. 5.1	28.64 -32	55.0 2.6	27.69 -48	57.6 2.6	17.60 -02	31.6 1.1	20.39 -02	27.1 0.6
15.1	28.36 -23	52.1 -3.0	27.26 -36	54.8 -2.9	17.60 +02	30.5 -1.2	20.39 +02	27.7 -0.7
25.0	28.18 -15	49.0 3.3	26.96 -24	51.7 3.2	17.64 -06	29.2 1.3	20.42 -06	28.4 0.7
35.0	28.11 -03	45.6 -3.5	26.78 -11	48.4 -3.4	17.72 +10	27.9 -1.3	20.50 +09	29.1 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Aquilæ. (<i>Altair</i> .)		ϵ Draconis.		β Aquilæ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 19 41	° ' " +10 21	h m 19 45	° ' " + 8 35	h m 19 48	° ' " +69 59	h m 19 50	° ' " + 6 8
Jan. 1.0	17.97 +.06	29.0 -1.7	41.62 +.05	30.7 -1.6	26.89 -.19	70.5 -3.2	11.38 +.05	42.6 -1.4
11.0	18.04 .10	27.3 1.7	41.70 .09	29.1 1.6	26.76 -.06	67.2 3.3	11.46 .09	41.2 1.4
21.0	18.16 .13	25.7 1.6	41.81 .13	27.5 1.6	26.76 +.05	63.8 3.4	11.57 .13	39.7 1.4
31.0	18.30 .16	24.1 1.5	41.95 .16	26.1 1.5	26.87 .17	60.4 3.3	11.71 .16	38.4 1.3
Feb. 9.9	18.48 .19	22.6 1.3	42.13 .19	24.8 1.3	27.10 .29	57.2 3.1	11.88 .19	37.2 1.1
19.9	18.69 +.22	21.4 -1.1	42.33 +.22	23.7 -1.0	27.44 +.39	54.2 -2.8	12.08 +.21	36.2 -0.9
29.9	18.92 .24	20.5 0.7	42.56 .24	22.8 0.7	27.88 .48	51.7 2.3	12.31 .24	35.5 0.6
Mar. 10.9	19.18 .26	20.0 -0.4	42.82 .26	22.3 -0.4	28.41 .56	49.6 1.8	12.56 .26	35.0 -0.3
20.8	19.45 .28	19.8 0.0	43.09 .28	22.2 0.0	29.00 .62	48.1 1.2	12.82 .28	35.0 +0.1
30.8	19.73 .29	20.0 +0.4	43.37 .29	22.5 +0.4	29.64 .66	47.3 -0.6	13.10 .29	35.2 0.4
Apr. 9.8	20.03 +.30	20.6 +0.8	43.67 +.30	23.1 +0.7	30.31 +.67	47.0 +0.1	13.40 +.30	35.8 +0.8
19.8	20.33 .30	21.5 1.1	43.97 .30	24.1 1.1	30.98 .67	47.4 0.7	13.70 .30	36.8 1.1
29.7	20.64 .30	22.8 1.4	44.28 .30	25.4 1.4	31.65 .65	48.5 1.3	14.00 .30	38.1 1.4
May 9.7	20.94 .29	24.4 1.7	44.58 .30	26.9 1.6	32.28 .61	50.2 1.9	14.31 .30	39.6 1.6
19.7	21.23 .28	26.2 1.9	44.87 .29	28.7 1.8	32.86 .55	52.3 2.4	14.60 .29	41.3 1.8
29.6	21.50 +.26	28.3 +2.1	45.15 +.27	30.7 +2.0	33.38 +.47	55.0 +2.8	14.88 +.27	43.2 +1.9
June 8.6	21.75 .23	30.4 2.2	45.40 .24	32.8 2.1	33.81 .39	58.0 3.2	15.13 .24	45.2 2.0
18.6	21.97 .20	32.6 2.2	45.63 .21	34.9 2.1	34.15 .29	61.3 3.4	15.36 .21	47.2 2.0
28.6	22.15 .17	34.8 2.2	45.82 .18	37.1 2.0	34.39 .18	64.8 3.5	15.56 .18	49.2 2.0
July 8.5	22.30 .13	36.9 2.1	45.97 .14	39.1 2.0	34.52 +0.8	68.4 3.6	15.72 .14	51.2 1.9
18.5	22.41 +.08	39.0 +2.0	46.08 +0.9	41.1 +1.9	34.54 -.03	72.1 +3.6	15.84 +.10	53.0 +1.7
28.5	22.47 +.04	40.8 1.8	46.15 .05	42.9 1.7	34.45 .14	75.6 3.5	15.91 .05	54.7 1.6
Aug. 7.4	22.48 .00	42.5 1.6	46.17 +.01	44.5 1.5	34.25 .25	79.1 3.3	15.94 +.01	56.2 1.4
17.4	22.46 -.04	44.0 1.4	46.15 -.04	46.0 1.3	33.95 .35	82.3 3.1	15.92 -.04	57.5 1.2
27.4	22.39 -.08	45.3 1.1	46.09 -.08	47.2 1.1	33.56 .44	85.2 2.8	15.87 -.07	58.5 1.0
Sept. 6.4	22.29 -.12	46.3 +0.9	46.00 -.11	48.2 +0.8	33.08 -.51	87.8 +2.4	15.78 -.10	59.4 +0.8
16.3	22.16 .14	47.1 0.6	45.87 .13	48.9 0.6	32.54 .57	90.0 2.0	15.66 .13	60.1 0.5
26.3	22.01 .16	47.6 0.4	45.73 .15	49.4 0.3	31.94 .62	91.8 1.5	15.51 .15	60.5 0.3
Oct. 6.3	21.84 .17	47.8 +0.1	45.57 .16	49.6 +0.1	31.30 .65	93.1 1.0	15.35 .16	60.6 +0.1
16.3	21.68 .16	47.8 -0.2	45.40 .16	49.6 -0.2	30.64 .66	93.8 +0.5	15.19 .16	60.6 -0.2
26.2	21.52 -.15	47.5 -0.4	45.24 -.15	49.4 -0.4	29.97 -.66	94.0 -0.1	15.04 -.15	60.3 -0.4
Nov. 5.2	21.37 .14	47.0 0.7	45.10 .13	48.9 0.6	29.32 .63	93.6 0.6	14.89 .13	59.9 0.6
15.2	21.24 .11	46.2 0.9	44.98 .11	48.1 0.9	28.71 .59	92.7 1.2	14.77 .11	59.2 0.8
25.2	21.14 .08	45.2 1.1	44.88 .08	47.2 1.1	28.15 .52	91.2 1.7	14.67 .08	58.3 1.0
Dec. 5.1	21.08 .04	43.9 1.3	44.82 .04	46.0 1.3	27.66 .45	89.2 2.2	14.61 .05	57.2 1.2
15.1	21.06 -.01	42.5 -1.5	44.79 -.01	44.7 -1.4	27.26 -.35	86.8 -2.7	14.58 -.01	56.0 -1.5
25.1	21.07 +.03	40.9 1.6	44.80 +.03	43.3 1.5	26.96 .25	83.9 3.0	14.59 +.03	54.6 1.4
35.1	21.12 +.07	39.3 -1.7	44.85 +.07	41.7 -1.6	26.76 -.15	80.8 -3.2	14.64 +.06	53.2 -1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Aquilæ.		♄ Cephei.		♑ Capricorni.		♏ Pavonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	h m 19 59	° ' " + 6 58	h m 20 12	° ' " + 77 23	h m 20 12	° ' " - 12 51	h m 20 17	° ' " - 57 3
Jan. 1.1	2.73 +.04	57.9 -1.4	16.09 - .45	56.0 -2.9	16.34 +.05	69.8 -0.3	24.55 +.03	77.4 +2.2
11.0	2.80 .08	56.5 1.4	15.72 .27	52.9 3.2	16.41 .08	70.1 0.2	24.61 .10	75.1 2.4
21.0	2.90 .12	55.0 1.4	15.55 - .08	49.6 3.3	16.51 .12	70.3 0.1	24.75 .17	72.7 2.5
31.0	3.03 .15	53.7 1.3	15.56 + .11	46.3 3.3	16.64 .15	70.4 -0.1	24.95 .23	70.2 2.5
Feb. 10.0	3.19 .18	52.4 1.1	15.76 .30	43.0 3.2	16.81 .18	70.5 0.0	25.21 .29	67.7 2.5
19.9	3.39 +.21	51.4 -0.9	16.15 + .47	39.9 2.9	17.00 +.21	70.4 +0.2	25.52 +.34	65.3 +2.4
29.9	3.60 .23	50.7 0.6	16.71 .63	37.2 2.5	17.23 .23	70.1 0.4	25.89 .38	62.9 2.3
Mar. 10.9	3.85 .25	50.2 -0.3	17.41 .77	34.8 2.1	17.47 .25	69.7 0.5	26.29 .43	60.7 2.1
20.8	4.11 .27	50.1 +0.1	18.24 .88	33.0 1.5	17.74 .27	69.0 0.7	26.74 .47	58.7 1.9
30.8	4.39 .29	50.4 0.5	19.17 .96	31.8 0.9	18.02 .29	68.2 0.9	27.22 .49	56.9 1.7
Apr. 9.8	4.68 +.30	51.0 +0.8	20.16 +1.00	31.2 -0.3	18.32 +.31	67.2 +1.1	27.72 +.51	55.4 +1.4
19.8	4.98 .30	52.0 1.1	21.17 1.01	31.2 +0.3	18.64 .32	66.1 1.2	28.24 .53	54.1 1.1
29.7	5.29 .31	53.3 1.4	22.18 .99	31.9 1.0	18.95 .32	64.8 1.3	28.77 .53	53.1 0.8
May 9.7	5.59 .30	54.8 1.7	23.15 .94	33.2 1.6	19.27 .32	63.5 1.4	29.30 .52	52.5 0.5
19.7	5.89 .29	56.6 1.9	24.06 .86	35.0 2.1	19.59 .31	62.1 1.4	29.82 .51	52.2 +0.1
29.7	6.17 +.27	58.5 +2.0	24.87 + .75	37.3 +2.5	19.89 +.29	60.7 +1.4	30.32 +.48	52.3 -0.2
June 8.6	6.43 .25	60.6 2.1	25.56 .62	40.1 2.9	20.18 .27	59.4 1.3	30.79 .44	52.7 0.6
18.6	6.67 .22	62.7 2.1	26.11 .48	43.2 3.2	20.44 .24	58.1 1.2	31.21 .40	53.4 0.9
28.6	6.87 .18	64.7 2.0	26.51 .32	46.6 3.4	20.67 .21	57.0 1.1	31.59 .34	54.5 1.2
July 8.5	7.04 .14	66.7 1.9	26.75 + .15	50.1 3.6	20.86 .17	56.0 0.9	31.90 .28	55.8 1.5
18.5	7.16 +.10	68.6 +1.8	26.82 - .01	53.7 +3.6	21.02 +.13	55.2 +0.8	32.14 +.21	57.4 -1.7
28.5	7.24 .06	70.4 1.7	26.72 .18	57.4 3.6	21.12 .08	54.5 0.6	32.31 .13	59.2 1.8
Aug. 7.5	7.28 +.01	72.0 1.5	26.46 .34	60.9 3.5	21.19 +.04	54.0 0.4	32.40 +.05	61.1 1.9
17.4	7.27 - .03	73.4 1.3	26.03 .50	64.4 3.3	21.20 - .01	53.6 0.3	32.41 - .03	63.1 1.9
27.4	7.22 .07	74.5 1.1	25.46 .64	67.5 3.0	21.17 .05	53.4 +0.1	32.34 .10	65.0 1.9
Sept. 6.4	7.14 - .10	75.5 +0.8	24.76 - .76	70.4 +2.7	21.10 - .08	53.4 0.0	32.20 - .17	66.8 -1.7
16.4	7.02 .13	76.2 0.6	23.93 .87	73.0 2.4	21.00 .12	53.4 -0.1	32.00 .23	68.4 1.5
26.3	6.88 .15	76.7 0.4	23.02 .96	75.1 1.9	20.87 .14	53.6 0.2	31.75 .27	69.8 1.2
Oct. 6.3	6.73 .16	76.9 +0.1	22.02 1.02	76.8 1.4	20.73 .15	53.8 0.2	31.46 .30	70.9 0.9
16.3	6.57 .16	76.9 -0.1	20.97 1.06	78.1 0.9	20.57 .15	54.0 0.3	31.15 .31	71.6 0.5
26.2	6.41 - .15	76.7 -0.3	19.90 - 1.07	78.7 +0.4	20.42 - .15	54.3 -0.3	30.84 - .31	71.9 -0.1
Nov. 5.2	6.26 .14	76.3 0.6	18.84 1.05	78.8 -0.2	20.28 .13	54.7 0.3	30.54 .29	71.7 +0.4
15.2	6.13 .11	75.6 0.8	17.80 1.00	78.4 0.7	20.15 .11	55.0 0.3	30.26 .25	71.2 0.8
25.2	6.03 .08	74.7 1.0	16.83 .93	77.3 1.3	20.05 .08	55.3 0.3	30.03 .21	70.2 1.2
Dec. 5.1	5.97 .05	73.7 1.1	15.95 .83	75.8 1.8	19.98 .05	55.6 0.3	29.85 .15	68.8 1.5
15.1	5.93 - .02	72.5 -1.3	15.18 - .70	73.7 -2.3	19.95 - .01	56.0 -0.3	29.73 - .08	67.1 +1.8
25.1	5.93 +.02	71.1 1.4	14.55 .55	71.1 2.7	19.96 +.02	56.3 0.3	29.68 .02	65.1 2.1
35.1	5.97 +.05	69.7 -1.4	14.08 - .40	68.2 -3.1	20.00 +.06	56.6 -0.3	29.70 +.05	62.9 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Cygni.		π Capricorni.		ϵ Delphini.		Groombridge 3241.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 20 18	° ' " +39 55	h m 20 21	° ' " -18 33	h m 20 28	° ' " +10 56	h m 20 30	° ' " +72 10
Jan. 1.1	28.32 -.03	24.8 -2.6	21.46 +.04	18.3 +0.1	13.82 +.01	55.5 -1.5	22.36 -.33	49.7 -2.8
11.0	28.31 +.01	22.1 2.8	21.52 .08	18.2 0.1	13.85 .05	53.9 1.6	22.09 .21	46.7 3.1
21.0	28.35 .06	19.2 2.8	21.61 .11	18.1 0.2	13.92 .08	52.4 1.5	21.95 -.08	43.5 3.4
31.0	28.44 .11	16.4 2.8	21.74 .15	17.8 0.3	14.02 .12	50.9 1.4	21.94 +.05	40.2 3.3
Feb. 10.0	28.57 .16	13.7 2.6	21.90 .18	17.5 0.4	14.15 .15	49.5 1.3	22.06 .19	36.9 3.2
19.9	28.75 +.20	11.2 -2.3	22.10 +.21	17.0 +0.5	14.32 +.18	48.3 -1.1	22.31 +.31	33.7 -3.0
29.9	28.97 .24	9.1 1.9	22.32 .23	16.4 0.7	14.51 .21	47.4 0.8	22.68 .43	30.9 2.6
Mar. 10.9	29.22 .27	7.4 1.4	22.56 .26	15.7 0.8	14.73 .23	46.8 0.4	23.16 .53	28.5 2.2
20.9	29.51 .30	6.2 0.9	22.83 .28	14.8 1.0	14.97 .26	46.5 -0.1	23.74 .62	26.5 1.7
30.8	29.83 .33	5.6 -0.4	23.12 .30	13.8 1.1	15.24 .28	46.6 +0.3	24.40 .68	25.1 1.1
Apr. 9.8	30.17 +.34	5.5 +0.2	23.42 +.31	12.6 +1.2	15.52 +.29	47.2 +0.7	25.11 +.73	24.3 -0.4
19.8	30.52 .35	6.0 0.8	23.74 .32	11.4 1.3	15.82 .30	48.1 1.1	25.85 .74	24.2 +0.2
29.8	30.88 .36	7.0 1.3	24.07 .33	10.1 1.3	16.13 .31	49.3 1.4	26.60 .74	24.7 0.8
May 9.7	31.23 .35	8.6 1.8	24.40 .33	8.8 1.3	16.44 .31	50.9 1.7	27.34 .72	25.9 1.4
19.7	31.58 .34	10.7 2.2	24.73 .32	7.5 1.8	16.75 .30	52.7 1.9	28.04 .67	27.6 2.0
29.7	31.90 +.31	13.1 +2.6	25.04 +.31	6.2 +1.2	17.04 +.29	54.7 +2.1	28.69 +.61	29.8 +2.5
June 8.6	32.20 .28	15.9 2.9	25.34 .29	5.1 1.1	17.32 .27	56.9 2.2	29.26 .52	32.5 2.9
18.6	32.46 .24	18.9 3.1	25.62 .26	4.0 1.0	17.58 .24	59.2 2.3	29.73 .43	35.5 3.2
28.6	32.68 .20	22.1 3.2	25.86 .23	3.1 0.8	17.80 .21	61.5 2.3	30.11 .32	38.9 3.4
July 8.6	32.86 .15	25.4 3.3	26.07 .19	2.4 0.6	17.99 .17	63.7 2.2	30.37 .20	42.4 3.6
18.5	32.98 +.10	28.7 +3.2	26.23 +.14	1.9 +0.5	18.14 +.13	65.9 +2.1	30.51 +.08	46.1 +3.7
28.5	33.05 +.04	31.9 3.1	26.35 .10	1.5 0.3	18.25 .08	67.9 2.0	30.53 -.04	49.8 3.7
Aug. 7.5	33.07 -.01	34.9 3.0	26.43 +.05	1.3 +0.1	18.31 +.04	69.8 1.8	30.44 .16	53.4 3.6
17.4	33.03 .06	37.8 2.8	26.45 .00	1.3 -0.1	18.33 -.01	71.5 1.6	30.22 .27	57.0 3.4
27.4	32.95 .11	40.4 2.5	26.44 -.04	1.4 0.2	18.30 .05	72.9 1.5	29.89 .38	60.3 3.2
Sept. 6.4	32.82 -.15	42.8 +2.1	26.37 -.08	1.6 -0.3	18.23 -.08	74.2 +1.1	29.46 -.47	63.4 +2.9
16.4	32.65 .19	44.7 1.8	26.28 .11	1.9 0.3	18.13 .11	75.1 0.8	28.94 .56	66.1 2.5
26.3	32.45 .21	46.3 1.4	26.15 .14	2.3 0.4	18.01 .14	75.8 0.6	28.34 .69	68.5 2.1
Oct. 6.3	32.23 .23	47.5 0.9	26.00 .15	2.6 0.4	17.86 .15	76.3 0.3	27.69 .08	70.4 1.7
16.3	31.99 .24	48.2 +0.5	25.85 .16	3.0 0.4	17.70 .16	76.5 +0.1	26.99 .71	71.8 1.2
26.2	31.75 -.23	48.4 0.0	25.69 -.15	3.4 -0.3	17.55 -.15	76.4 -0.2	26.27 -.72	72.6 +0.6
Nov. 5.2	31.52 .22	48.1 -0.5	25.54 .14	3.7 0.3	17.40 .14	76.0 0.5	25.54 .72	72.9 0.0
15.2	31.31 .20	47.4 0.9	25.41 .12	3.9 0.2	17.26 .13	75.4 0.7	24.83 .69	72.7 -0.5
25.2	31.11 .18	46.3 1.4	25.30 .09	4.1 0.2	17.14 .10	74.6 0.9	24.16 .65	71.9 1.1
Dec. 5.1	30.96 .14	44.6 1.8	25.23 .06	4.2 -0.1	17.05 .07	73.6 1.1	23.54 .58	70.5 1.7
15.1	30.83 -.10	42.6 -2.2	25.19 -.02	4.3 0.0	17.00 -.04	72.3 -1.3	23.00 -.50	68.5 -2.2
25.1	30.75 .06	40.3 2.5	25.18 +.02	4.3 0.0	16.97 -.01	70.9 1.5	22.55 .40	66.1 2.6
35.1	30.72 -.02	37.7 -2.7	25.22 +.05	4.3 +0.1	16.98 +.02	69.4 -1.5	22.21 -.30	63.3 -2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cygni.		μ Aquarii.		12 Year Cat. 1879.		ν Cygni.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	$^{\text{h}}$ $^{\text{m}}$ 20 37	$^{\circ}$ $'$ +44 54	$^{\text{h}}$ $^{\text{m}}$ 20 47	$^{\circ}$ $'$ - 9 22	$^{\text{h}}$ $^{\text{m}}$ 20 52	$^{\circ}$ $'$ +80 9	$^{\text{h}}$ $^{\text{m}}$ 20 53	$^{\circ}$ $'$ +40 45
	$^{\text{s}}$	$''$	$^{\text{s}}$	$''$	$^{\text{s}}$	$''$	$^{\text{s}}$	$''$
Jan. 1.1	51.50 -.07	32.7 -2.6	2.05 +.01	32.0 -0.4	9.18- .78	50.8 -2.5	16.26 -.07	62.6 -2.4
11.1	51.45 -.04	30.0 2.8	2.08 .05	32.5 0.3	8.50 .57	48.1 2.9	16.21 -.02	60.1 2.6
21.0	51.46 +.03	27.1 2.9	2.14 .08	32.8 0.4	8.03 .34	45.0 3.1	16.21 +.02	57.4 2.7
31.0	51.52 .08	24.2 2.9	2.24 .11	33.1 0.2	7.81- .10	41.8 3.2	16.25 .07	54.6 2.7
Feb. 10.0	51.63 .13	21.3 2.7	2.37 .14	33.2 -0.1	7.82+ .14	38.6 3.2	16.34 .11	51.9 2.6
20.0	51.79 +.18	18.7 -2.5	2.53 +.17	33.2 +0.1	8.09+ .39	35.4 -3.1	16.48 +.16	49.4 -2.4
29.9	51.99 .23	16.3 2.1	2.71 .20	33.0 0.3	8.58 .60	32.4 2.8	16.66 .20	47.1 2.1
Mar. 10.9	52.24 .27	14.4 1.7	2.93 .23	32.6 0.5	9.29 .81	29.7 2.4	16.88 .24	45.3 1.7
20.9	52.53 .30	12.9 1.2	3.17 .25	32.0 0.7	10.20 .98	27.5 2.0	17.15 .28	43.8 1.2
30.8	52.85 .33	12.0 -0.6	3.43 .27	31.1 0.9	11.25 1.11	25.8 1.4	17.44 .31	42.9 0.6
Apr. 9.8	53.20 +.36	11.6 0.0	3.71 +.29	30.1 +1.1	12.43+1.21	24.6 -0.8	17.77 +.34	42.5 -0.1
19.8	53.57 .37	11.9 +0.5	4.01 .31	28.9 1.3	13.67 1.26	24.1 -0.2	18.12 .35	42.7 +0.5
29.8	53.95 .38	12.7 1.1	4.32 .32	27.5 1.5	14.96 1.28	24.2 +0.4	18.48 .36	43.5 1.0
May 9.7	54.33 .38	14.1 1.6	4.64 .32	25.9 1.6	16.22 1.24	25.0 1.0	18.84 .36	44.8 1.5
19.7	54.70 .36	16.0 2.1	4.95 .32	24.3 1.6	17.44 1.17	26.3 1.6	19.20 .36	46.6 2.0
June 29.7	55.06 +.34	18.3 +2.5	5.27 +.31	22.7 +1.6	18.57+1.07	28.2 +2.1	19.55 +.34	48.8 +2.4
8.7	55.39 .31	21.0 2.9	5.56 .29	21.1 1.6	19.58 .93	30.5 2.6	19.88 .31	51.4 2.7
18.6	55.68 .27	24.1 3.1	5.85 .27	19.5 1.5	20.44 .77	33.3 3.0	20.18 .28	54.3 3.0
28.6	55.93 .23	27.3 3.3	6.10 .24	18.1 1.4	21.12 .59	36.4 3.3	20.44 .24	57.4 3.3
July 8.6	56.13 .18	30.6 3.4	6.32 .20	16.8 1.2	21.61 .39	39.8 3.5	20.66 .19	60.7 3.3
18.5	56.28 +.12	34.1 +3.4	6.50 +.16	15.6 +1.1	21.90+ .18	43.4 +3.6	20.83 +.14	64.0 +3.5
28.5	56.37 .06	37.5 3.3	6.63 .11	14.6 0.9	22.00- .02	47.1 3.7	20.94 .09	67.3 3.5
Aug. 7.5	56.40 +.01	40.8 3.2	6.73 .07	13.9 0.7	21.85 .23	50.8 3.7	21.00 +.03	70.5 3.1
17.5	56.38 -.05	43.9 3.0	6.77 +.02	13.3 0.5	21.52 .43	54.4 3.6	21.01 -.02	73.6 2.9
27.4	56.30 .10	46.8 2.7	6.78 -.02	12.9 0.3	20.99 .62	57.9 3.4	20.96 .07	76.4 2.7
Sept. 6.4	56.18 -.15	49.4 +2.4	6.73 -.06	12.6 +0.2	20.27- .80	61.2 +3.2	20.87 -.12	79.0 +2.4
16.4	56.01 .19	51.7 2.1	6.66 .09	12.6 0.0	19.39 .95	64.2 2.9	20.73 .16	81.3 2.1
26.4	55.80 .22	53.6 1.7	6.55 .12	12.6 -0.1	18.36 1.09	66.9 2.5	20.56 .19	83.2 1.7
Oct. 6.3	55.57 .24	55.0 1.2	6.42 .13	12.8 0.2	17.21 1.20	69.2 2.0	20.36 .21	84.7 1.5
16.3	55.32 .25	56.0 0.8	6.28 .14	13.0 0.3	15.97 1.28	71.0 1.6	20.14 .22	85.8 0.8
26.3	55.06 -.26	56.6 +0.3	6.14 -.14	13.4 -0.3	14.66-1.33	72.4 +1.1	19.91 -.23	86.4 +0.4
Nov. 5.2	54.80 .25	56.6 -0.2	5.99 .14	13.7 0.4	13.31 1.35	73.2 +0.5	19.68 .22	86.5 -0.1
15.2	54.56 .23	56.1 0.7	5.86 .12	14.1 0.4	11.97 1.33	73.4 -0.1	19.47 .21	86.2 0.6
25.2	54.33 .21	55.2 1.2	5.75 .10	14.6 0.5	10.66 1.27	73.0 0.7	19.26 .19	85.4 1.0
Dec. 5.2	54.14 .18	53.7 1.7	5.67 .07	15.0 0.5	9.42 1.18	72.1 1.3	19.08 .16	84.1 1.5
15.1	53.98 -.14	51.8 -2.1	5.61 -.04	15.5 -0.5	8.30 1.05	70.5 -1.8	18.93 -.13	82.4 -1.9
25.1	53.86 .10	49.5 2.4	5.58 -.02	16.0 0.4	7.32 .89	68.5 2.3	18.82 .09	80.3 2.2
35.1	53.79 -.05	47 0 -2.7	5.59 +.02	16.4 0.4	6.52 .70	66.0 -2.6	18.75 -.06	78.0 -2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	61 Cygni.		ζ Cygni.		α Cephei.		ι Pegasi.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 21 2	° ' " +38 14	h m 21 8	° ' " +29 47	h m 21 16	° ' " +62 8	h m 21 17	° ' " +19 21
Jan. 1.1	12.70 -.06	19.1 -2.2	29.45 -.05	62.4 -2.0	3.07 -.24	49.2 -2.4	15.71 -.04	34.1 -1.6
11.1	12.66 -.02	16.7 2.4	29.41 -.01	60.3 2.2	2.86 .17	46.5 2.8	15.70 .00	32.4 1.7
21.1	12.67 +.03	14.3 2.5	29.42 +.02	58.0 2.3	2.73 .09	43.6 3.0	15.71 +.03	30.6 1.8
31.0	12.71 .07	11.7 2.5	29.46 .06	55.7 2.3	2.68 -.02	40.5 3.1	15.75 .06	28.8 1.8
Feb. 10.0	12.80 .11	9.2 2.4	29.54 .10	53.5 2.2	2.71 +.07	37.3 3.1	15.83 .10	27.1 1.7
20.0	12.94 +.16	6.8 -2.2	29.66 +.14	51.4 -2.0	2.82 +.15	34.2 -3.0	15.94 +.13	25.5 -1.5
29.9	13.12 .20	4.8 1.9	29.82 .18	49.5 1.7	3.01 .23	31.3 2.8	16.09 .16	24.2 1.2
Mar. 10.9	13.34 .24	3.0 1.5	30.01 .21	48.0 1.3	3.28 .31	28.7 2.4	16.27 .20	23.1 0.9
20.9	13.60 .28	1.7 1.1	30.24 .24	46.9 0.9	3.62 .37	26.6 1.9	16.48 .23	22.5 0.5
30.9	13.89 .31	0.9 -0.5	30.50 .27	46.3 -0.4	4.02 .43	24.9 1.4	16.72 .25	22.2 -0.1
Apr. 9.8	14.21 +.33	0.6 0.0	30.79 +.30	46.1 +0.1	4.48 +.48	23.8 -0.8	16.99 +.28	22.3 +0.4
19.8	14.55 .35	0.9 +0.5	31.10 .32	46.5 0.6	4.98 .51	23.3 -0.2	17.28 .30	22.9 0.8
29.8	14.91 .36	1.7 1.1	31.42 .33	47.3 1.1	5.50 .53	23.4 +0.4	17.59 .31	23.9 1.2
May 9.8	15.28 .37	3.1 1.6	31.76 .34	48.6 1.5	6.03 .53	24.2 1.0	17.91 .32	25.3 1.6
19.7	15.65 .36	4.9 2.0	32.10 .33	50.4 1.9	6.56 .52	25.5 1.6	18.23 .32	27.1 1.9
29.7	16.00 +.35	7.1 +2.4	32.43 +.32	52.5 +2.3	7.07 +.49	27.4 +2.1	18.55 +.31	29.1 +2.2
June 8.7	16.34 .32	9.7 2.8	32.74 .30	55.0 2.6	7.54 .45	29.8 2.6	18.86 .30	31.4 2.4
18.6	16.65 .29	12.7 3.0	33.03 .28	57.6 2.8	7.97 .40	32.6 3.0	19.14 .28	33.9 2.5
28.6	16.93 .25	15.8 3.2	33.29 .24	60.5 2.9	8.35 .34	35.7 3.3	19.41 .25	36.5 2.6
July 8.6	17.16 .21	19.1 3.3	33.52 .20	63.4 3.0	8.65 .27	39.1 3.5	19.64 .21	39.1 2.6
18.6	17.35 +.16	22.4 +3.3	33.70 +.16	66.4 +3.0	8.88 +.19	42.7 +3.6	19.83 +.17	41.7 +2.6
28.5	17.48 .11	25.7 3.3	33.84 .11	69.4 2.9	9.04 .11	46.4 3.7	19.98 .13	44.3 2.5
Aug. 7.5	17.57 .06	29.0 3.2	33.93 .06	72.2 2.8	9.11 +.03	50.1 3.7	20.08 .08	46.7 2.3
17.5	17.60 +.01	32.1 3.0	33.97 +.02	74.9 2.6	9.10 -.05	53.8 3.6	20.14 +.04	48.9 2.1
27.4	17.58 -.04	35.0 2.8	33.96 -.03	77.4 2.4	9.02 .12	57.3 3.4	20.16 -.01	50.9 1.9
Sept. 6.4	17.51 -.09	37.6 +2.5	33.91 -.07	79.7 +2.1	8.86 -.20	60.6 +3.2	20.13 -.05	52.7 +1.7
16.4	17.41 .13	39.9 2.2	33.82 .11	81.6 1.8	8.63 .26	63.7 2.9	20.06 .08	54.3 1.4
26.4	17.26 .16	41.9 1.8	33.69 .14	83.2 1.5	8.34 .31	66.3 2.5	19.96 .11	55.5 1.1
Oct. 6.3	17.09 .18	43.5 1.4	33.54 .16	84.5 1.1	8.00 .36	68.7 2.1	19.83 .13	56.5 0.8
16.3	16.90 .20	44.7 1.0	33.37 .17	85.4 0.7	7.63 .39	70.5 1.6	19.69 .15	57.1 0.5
26.3	16.69 -.20	45.5 +0.5	33.19 -.18	85.9 +0.3	7.22 -.41	71.9 +1.1	19.54 -.15	57.4 +0.2
Nov. 5.3	16.49 .20	45.7 +0.1	33.01 .18	86.0 -0.1	6.81 .42	72.7 +0.5	19.38 .15	57.4 -0.2
15.2	16.29 .19	45.6 -0.4	32.83 .17	85.7 0.5	6.39 .41	72.9 0.0	19.23 .14	57.1 0.5
25.2	16.11 .17	44.9 0.9	32.67 .15	85.0 0.9	5.98 .39	72.6 -0.6	19.10 .13	56.4 0.8
Dec. 5.2	15.95 .15	43.8 1.3	32.53 .13	84.0 1.3	5.60 .37	71.7 1.2	18.98 .11	55.5 1.1
15.2	15.81 -.12	42.3 -1.7	32.41 -.10	82.5 -1.6	5.25 -.32	70.3 -1.7	18.88 -.08	54.3 -1.3
25.1	15.71 .08	40.5 2.0	32.32 .07	80.8 1.9	4.95 .27	68.3 2.2	18.81 .06	52.8 1.5
35.1	15.65 -.05	38.3 -2.3	32.27 -.04	78.8 -2.1	4.71 -.22	65.9 -2.5	18.77 -.03	51.2 -1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		β Cephei.		ξ Aquarii.		ϵ Pegasi.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	h m 21 26	° ' " — 6 1	h m 21 27	° ' " + 70 5	h m 21 32	° ' " — 8 18	h m 21 39	° ' " + 9 23
Jan. 1.1	4.55 - .02	48.9 - 0.5	15.06 - .39	84.3 - 2.3	12.50 - .02	80.1 - 0.4	4.08 - .04	52.1 - 1.2
11.1	4.55 + .01	49.5 0.5	14.71 .30	81.8 2.7	12.49 + .01	80.5 0.4	4.06 - .01	50.9 1.2
21.1	4.57 .04	50.0 0.4	14.45 .20	78.9 3.0	12.51 .04	80.9 0.3	4.06 + .02	49.7 1.2
31.0	4.62 .07	50.3 0.3	14.31 - .09	75.8 3.2	12.56 .07	81.1 - 0.2	4.10 .05	48.4 1.2
Feb. 10.0	4.71 .10	50.6 - 0.2	14.27 + .03	72.6 3.2	12.64 .09	81.2 0.0	4.16 .08	47.3 1.1
20.0	4.83 + .13	50.7 0.0	14.36 + .14	69.4 - 3.1	12.75 + .13	81.1 + 0.2	4.25 + .11	46.3 - 0.9
29.9	4.97 .16	50.6 + 0.2	14.56 .26	66.4 2.9	12.89 .16	80.8 0.4	4.38 .14	45.5 0.6
Mar. 10.9	5.15 .19	50.2 0.4	14.87 .36	63.6 2.6	13.07 .19	80.4 0.6	4.54 .18	45.0 - 0.3
20.9	5.35 .22	49.7 0.7	15.29 .46	61.2 2.2	13.27 .22	79.7 0.8	4.73 .21	44.8 0.0
30.9	5.59 .24	48.9 0.9	15.79 .54	59.3 1.7	13.50 .24	78.8 1.0	4.95 .24	44.9 + 0.3
Apr. 9.8	5.84 + .27	47.8 + 1.2	16.37 + .61	57.9 - 1.1	13.75 + .27	77.7 + 1.2	5.20 + .26	45.4 + 0.6
19.8	6.12 .29	46.5 1.4	17.01 .66	57.1 - 0.5	14.03 .29	76.3 1.4	5.47 .28	46.2 1.0
29.8	6.42 .31	45.1 1.6	17.69 .68	56.9 + 0.1	14.33 .31	74.8 1.6	5.77 .30	47.4 1.3
May 9.8	6.73 .32	43.5 1.7	18.39 .69	57.4 0.8	14.64 .32	73.1 1.7	6.07 .31	48.9 1.6
19.7	7.05 .32	41.7 1.8	19.08 .68	58.5 1.4	14.96 .32	71.4 1.8	6.39 .32	50.6 1.8
29.7	7.37 + .31	39.9 + 1.8	19.74 + .64	60.1 + 1.9	15.28 + .32	69.6 + 1.8	6.71 + .31	52.6 + 2.0
June 8.7	7.68 .30	38.0 1.8	20.37 .59	62.3 2.4	15.60 .31	67.7 1.8	7.02 .30	54.7 2.2
18.7	7.98 .29	36.2 1.8	20.93 .53	64.9 2.8	15.90 .29	66.0 1.7	7.31 .29	56.9 2.3
28.6	8.25 .26	34.5 1.7	21.42 .44	67.9 3.2	16.18 .27	64.3 1.6	7.59 .26	59.2 2.3
July 8.6	8.50 .23	32.9 1.5	21.82 .35	71.2 3.4	16.43 .23	62.8 1.4	7.84 .23	61.5 2.2
18.6	8.71 + .19	31.4 + 1.4	22.13 + .25	74.8 + 3.6	16.65 + .20	61.5 + 1.3	8.05 + .19	63.7 + 2.1
28.5	8.88 .15	30.2 1.2	22.33 .15	78.5 3.7	16.83 .16	60.3 1.1	8.22 .15	65.8 2.0
Aug. 7.5	9.00 .10	29.1 1.0	22.42 + .04	82.3 3.8	16.96 .11	59.3 0.9	8.35 .11	67.7 1.9
17.5	9.09 .06	28.3 0.8	22.41 - .07	86.0 3.7	17.05 .07	58.6 0.6	8.44 .06	69.5 1.7
27.5	9.12 + .02	27.6 0.6	22.29 .17	89.7 3.6	17.09 + .02	58.1 0.4	8.48 + .02	71.0 1.4
Sept. 6.4	9.12 - .02	27.1 + 0.4	22.07 - .27	93.2 + 3.4	17.09 - .02	57.8 + 0.2	8.48 - .02	72.4 + 1.2
16.4	9.07 .06	26.9 + 0.2	21.76 .35	96.4 3.1	17.06 .06	57.6 0.0	8.44 .05	73.5 1.0
26.4	9.00 .09	26.8 0.0	21.36 .43	99.4 2.8	16.98 .09	57.7 - 0.1	8.37 .08	74.3 0.7
Oct. 6.4	8.89 .11	26.9 - 0.1	20.90 .50	102.0 2.4	16.88 .11	57.8 0.2	8.27 .11	74.9 0.5
16.3	8.77 .13	27.1 0.2	20.37 .55	104.1 1.9	16.76 .12	58.1 0.3	8.15 .13	75.3 + 0.2
26.3	8.64 - .13	27.4 - 0.3	19.81 - .58	105.8 + 1.4	16.63 - .13	58.5 - 0.4	8.02 - .13	75.4 0.0
Nov. 5.3	8.50 .13	27.8 0.4	19.21 .60	106.9 0.9	16.50 .13	58.9 0.5	7.89 .13	75.3 - 0.2
15.2	8.37 .12	28.2 0.5	18.61 .60	107.5 + 0.3	16.37 .12	59.4 0.5	7.75 .13	75.0 0.4
25.2	8.25 .11	28.7 0.5	18.01 .59	107.5 - 0.3	16.25 .11	59.9 0.5	7.63 .12	74.4 0.6
Dec. 5.2	8.15 .09	29.3 0.6	17.43 .56	106.9 0.9	16.15 .09	60.4 0.5	7.52 .10	73.7 0.8
15.2	8.07 - .07	29.8 - 0.6	16.90 - .50	105.6 - 1.5	16.07 - .07	60.9 - 0.5	7.43 - .08	72.8 - 1.0
25.1	8.02 .04	30.4 0.6	16.42 .44	103.9 2.0	16.01 .04	61.3 0.5	7.36 .06	71.7 1.1
35.1	8.00 - .01	31.0 - 0.5	16.02 - .36	101.7 - 2.5	15.98 - .01	61.8 - 0.4	7.31 - .03	70.5 - 1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Cephei.		μ Capricorni.		79 Draconis.		α Aquarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 21 40	° ' +70 49	h m 21 47	° ' -14 2	h m 21 51	° ' +73 12	h m 22 0	° ' -0 49
	s	"	s	"	s	"	s	"
Jan. 1.1	20.00 -.43	68.3 -2.1	37.21 -.04	35.8 -.02	29.47 -.54	49.4 -2.0	26.13 -.05	33.5 -.07
11.1	19.60 .35	65.9 2.6	37.19 -.01	35.9 -.01	28.98 .44	47.2 2.4	26.09 -.02	34.3 0.7
21.1	19.31 .24	63.2 2.9	37.20 +.02	35.9 +0.1	28.60 .32	44.6 2.8	26.09 +.01	34.9 0.6
31.1	19.12 .13	60.2 3.1	37.24 .05	35.8 0.2	28.34 .20	41.6 3.0	26.11 .03	35.6 0.6
Feb. 10.0	19.05 -.01	57.0 3.2	37.30 .08	35.5 0.4	28.21 -.06	38.5 3.2	26.15 .06	36.1 0.4
20.0	19.09 +.11	53.8 -3.1	37.40 +.11	35.0 +0.6	28.21 +.08	35.3 -3.1	26.23 +.09	36.4 -0.2
Mar. 1.0	19.26 .23	50.7 3.0	37.53 .14	34.4 0.7	28.36 .22	32.2 3.0	26.34 .12	36.5 0.0
10.9	19.55 .34	47.9 2.7	37.69 .18	33.6 0.9	28.64 .35	29.3 2.8	26.48 .16	36.4 +0.2
20.9	19.95 .45	45.4 2.3	37.88 .21	32.5 1.1	29.05 .47	26.7 2.4	26.65 .19	36.1 0.5
30.9	20.45 .54	43.3 1.8	38.10 .24	31.3 1.3	29.58 .58	24.5 1.9	26.86 .22	35.5 0.8
Apr. 9.9	21.03 +.61	41.8 -1.2	38.35 +.26	29.9 +1.5	30.21 +.67	22.8 -1.4	27.09 +.25	34.6 +1.0
19.8	21.67 .67	40.8 -0.6	38.63 .29	28.3 1.6	30.92 .74	21.7 0.8	27.35 .27	33.5 1.3
29.8	22.37 .70	40.5 0.0	38.93 .31	26.7 1.7	31.69 .78	21.1 -0.2	27.64 .29	32.1 1.5
May 9.8	23.08 .72	40.8 +0.6	39.24 .32	24.9 1.8	32.49 .80	21.2 +0.4	27.94 .31	30.4 1.7
19.8	23.80 .71	41.7 1.2	39.57 .33	23.1 1.8	33.30 .80	21.9 1.0	28.25 .32	28.6 1.9
29.7	24.50 +.68	43.2 +1.7	39.90 +.33	21.3 +1.8	34.09 +.77	23.2 +1.6	28.57 +.32	26.7 +2.0
June 8.7	25.17 .63	45.2 2.3	40.22 .32	19.6 1.7	34.84 .72	25.1 2.1	28.89 .31	24.7 2.0
18.7	25.77 .57	47.7 2.7	40.53 .30	17.9 1.6	35.54 .65	27.4 2.6	29.19 .30	22.7 2.0
28.6	26.30 .49	50.6 3.1	40.83 .28	16.4 1.4	36.15 .57	30.2 3.0	29.48 .28	20.7 2.0
July 8.6	26.75 .40	53.8 3.4	41.10 .25	15.1 1.2	36.68 .47	33.3 3.3	29.75 .25	18.8 1.8
18.6	27.10 +.30	57.3 +3.6	41.33 +.22	14.0 +1.0	37.09 +.36	36.8 +3.5	29.98 +.22	17.0 +1.7
28.6	27.34 .19	61.0 3.7	41.53 .17	13.1 0.8	37.39 .24	40.4 3.7	30.18 .18	15.4 1.5
Aug. 7.5	27.48 +.08	64.8 3.8	41.68 .13	12.4 0.5	37.57 +.12	44.1 3.8	30.33 .13	13.9 1.3
17.5	27.50 -.03	68.6 3.7	41.79 .08	12.0 0.3	37.63 .00	48.0 3.8	30.44 .09	12.7 1.1
27.5	27.42 .14	72.3 3.7	41.85 +.04	11.8 +0.1	37.56 -.13	51.7 3.7	30.51 .05	11.7 0.9
Sept. 6.5	27.23 -.24	75.9 +3.5	41.86 .00	11.8 -0.1	37.38 -.24	55.4 +3.6	30.54 +.01	10.9 +0.7
16.4	26.95 .33	79.3 3.2	41.84 -.04	12.0 0.2	37.08 .35	58.9 3.3	30.52 -.03	10.4 0.5
26.4	26.57 .41	82.3 2.9	41.78 .07	12.3 0.4	36.68 .44	62.1 3.1	30.47 .06	10.0 0.3
Oct. 6.4	26.12 .48	85.1 2.5	41.69 .10	12.7 0.5	36.19 .53	65.0 2.7	30.40 .09	9.8 +0.1
16.3	25.61 .54	87.4 2.1	41.58 .12	13.2 0.5	35.63 .60	67.5 2.3	30.29 .11	9.8 -0.1
26.3	25.04 -.58	89.3 +1.6	41.45 -.13	13.7 -0.5	35.00 -.65	69.6 +1.8	30.18 -.12	10.0 -0.2
Nov. 5.3	24.44 .61	90.6 1.1	41.32 .13	14.3 0.5	34.32 .69	71.1 1.3	30.05 .12	10.3 0.4
15.3	23.82 .62	91.4 +0.5	41.18 .13	14.8 0.5	33.61 .71	72.1 0.7	29.93 .12	10.7 0.5
25.2	23.20 .61	91.6 -0.1	41.06 .12	15.3 0.5	32.90 .70	72.5 +0.1	29.81 .11	11.3 0.6
Dec. 5.2	22.60 .58	91.2 0.7	40.95 .10	15.8 0.4	32.20 .68	72.3 -0.5	29.70 .10	11.9 0.6
15.2	22.03 -.54	90.2 -1.3	40.86 -.08	16.1 -0.3	31.54 -.64	71.5 -1.1	29.61 -.08	12.5 -0.7
25.1	21.52 .48	88.6 1.8	40.80 .05	16.4 0.2	30.92 .58	70.1 1.7	29.54 .06	13.2 0.7
35.1	21.08 -.41	86.5 -2.3	40.76 -.03	16.6 -0.1	30.38 -.50	68.2 -2.1	29.49 -.04	14.0 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Gruis.		θ Aquarii.		π Aquarii.		η Aquarii.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 22 I	° ' -47 27	h m 22 II	° ' - 8 17	h m 22 19	° ' + 0 50	h m 22 30	° ' - 0 38
Jan. 1.1	40.48 -10	66.1 +1.3	20.46 -05	69.0 -0.4	57.63 -06	56.8 -0.7	0.46 -06	74.8 -0.7
11.1	40.41 .05	64.6 1.6	20.42 -03	69.4 0.3	57.58 .04	56.0 0.7	0.40 .04	75.5 0.7
21.1	40.38 -01	62.8 1.9	20.41 .00	69.7 0.2	57.55 -01	55.3 0.7	0.37 -02	76.1 0.6
31.1	40.39 +03	60.8 2.2	20.42 +03	69.8 -0.1	57.55 +01	54.6 0.6	0.37 +01	76.7 0.5
Feb. 10.0	40.45 .08	58.5 2.4	20.46 .06	69.9 +0.1	57.58 .04	54.1 0.5	0.38 .03	77.1 0.4
20.0	40.55 +12	56.0 +2.5	20.53 +09	69.7 +0.2	57.64 +07	53.7 -0.3	0.43 +06	77.4 -0.2
Mar. 1.0	40.70 .17	53.5 2.6	20.64 .12	69.4 0.4	57.73 .10	53.4 -0.1	0.51 .10	77.6 0.0
11.0	40.89 .21	50.8 2.6	20.77 .15	68.8 0.7	57.85 .14	53.4 +0.1	0.62 .13	77.5 +0.2
20.9	41.12 .26	48.2 2.6	20.93 .18	68.1 0.9	58.00 .17	53.7 0.4	0.77 .16	77.1 0.5
30.9	41.40 .30	45.6 2.6	21.13 .21	67.1 1.1	58.19 .20	54.3 0.7	0.94 .19	76.5 0.8
Apr. 9.9	41.72 +34	43.0 +2.5	21.36 +24	65.8 +1.3	58.41 +23	55.1 +1.0	1.16 +23	75.6 +1.0
19.8	42.07 .37	40.6 2.3	21.61 .27	64.4 1.5	58.66 .26	56.2 1.2	1.40 .26	74.4 1.3
29.8	42.46 .40	38.4 2.1	21.89 .29	62.8 1.7	58.93 .28	57.5 1.5	1.67 .28	73.0 1.5
May 9.8	42.87 .42	36.4 1.9	22.20 .31	61.0 1.8	59.23 .30	59.1 1.7	1.96 .30	71.4 1.7
19.8	43.29 .43	34.6 1.6	22.51 .32	59.2 1.9	59.54 .31	60.9 1.9	2.27 .31	69.6 1.9
29.7	43.73 +43	33.2 +1.3	22.84 +32	57.3 +1.9	59.86 +32	62.9 +2.0	2.59 +32	67.6 +2.0
June 8.7	44.16 .43	32.1 0.9	23.16 .32	55.3 1.9	60.18 .32	64.9 2.1	2.91 .32	65.6 2.0
18.7	44.58 .41	31.4 0.5	23.47 .31	53.4 1.8	60.49 .31	67.0 2.1	3.22 .31	63.5 2.0
28.7	44.98 .38	31.0 +0.1	23.77 .29	51.6 1.7	60.79 .29	69.1 2.0	3.53 .29	61.5 2.0
July 8.6	45.35 .34	31.1 -0.3	24.05 .26	50.0 1.5	61.06 .26	71.0 1.9	3.81 .27	59.5 1.9
18.6	45.67 +30	31.6 -0.6	24.29 +23	48.5 +1.4	61.31 +23	72.9 +1.8	4.06 +24	57.7 +1.8
28.6	45.95 .24	32.4 1.0	24.50 .19	47.3 1.2	61.52 .19	74.7 1.7	4.28 .20	56.0 1.6
Aug. 7.5	46.16 .19	33.6 1.3	24.67 .15	46.2 0.9	61.69 .15	76.2 1.5	4.46 .16	54.5 1.4
17.5	46.32 .12	35.0 1.5	24.80 .11	45.4 0.7	61.82 .11	77.6 1.2	4.60 .12	53.2 1.2
27.5	46.41 +06	36.6 1.7	24.88 .06	44.8 0.5	61.91 .06	78.7 1.0	4.70 .07	52.2 0.9
Sept. 6.5	46.43 .00	38.4 -1.8	24.92 +02	44.5 +0.3	61.95 +02	79.6 +0.8	4.75 +03	51.3 +0.7
16.4	46.40 -06	40.3 1.8	24.92 -02	44.3 +0.1	61.95 -01	80.3 0.6	4.77 .00	50.8 0.5
26.4	46.31 .11	42.1 1.8	24.88 .05	44.4 -0.1	61.92 .05	80.8 0.4	4.75 -04	50.4 0.3
Oct. 6.4	46.17 .16	43.9 1.7	24.81 .08	44.6 0.3	61.86 .08	81.0 +0.2	4.69 .07	50.2 +0.1
16.4	45.99 .19	45.5 1.5	24.71 .11	44.9 0.4	61.77 .10	81.1 0.0	4.61 .09	50.2 -0.1
26.3	45.79 -21	46.8 -1.2	24.60 -12	45.3 -0.5	61.67 -11	81.0 -0.2	4.51 -10	50.4 -0.2
Nov. 5.3	45.57 .22	47.8 0.8	24.48 .12	45.8 0.5	61.55 .12	80.7 0.3	4.40 .11	50.6 0.4
15.3	45.35 .22	48.4 0.4	24.36 .12	46.3 0.5	61.43 .12	80.3 0.4	4.29 .11	51.1 0.5
25.2	45.13 .21	48.7 -0.1	24.24 .11	46.9 0.5	61.31 .11	79.8 0.5	4.17 .11	51.6 0.6
Dec. 5.2	44.93 .19	48.6 +0.3	24.13 .10	47.4 0.5	61.20 .10	79.2 0.6	4.06 .10	52.2 0.6
15.2	44.76 -16	48.1 +0.7	24.03 -09	48.0 -0.5	61.11 -09	78.6 -0.7	3.96 -09	52.8 -0.7
25.2	44.62 .12	47.1 1.1	23.96 .07	48.4 0.5	61.03 .07	77.8 0.7	3.88 .08	53.5 0.7
35.1	44.51 -09	45.9 +1.4	23.90 -05	48.9 -0.4	60.96 -05	77.1 -0.7	3.81 -06	54.2 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	226 Cephei (B.)		ζ Pegasi.		ι Cephei.		λ Aquarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 22 30	° ' " +75 41	h m 22 36	° ' " +10 17	h m 22 45	° ' " +65 38	h m 22 47	° ' " - 8 7
Jan. 1.2	22.29 -.71	41.5 -1.4	16.15 -.08	20.0 -1.0	56.17 -.39	87.9 -1.4	11.24 -.07	62.4 -0.4
11.1	21.62 .62	39.8 2.0	16.08 .05	18.9 1.1	55.80 .34	86.2 1.9	11.18 .05	62.8 .03
21.1	21.05 .51	37.6 2.4	16.04 .03	17.9 1.1	55.49 .28	84.1 2.3	11.14 .03	63.1 0.2
31.1	20.61 .37	34.9 2.8	16.02 -.01	16.8 1.1	55.24 .21	81.5 2.7	11.12 -.01	63.2 -0.1
Feb. 10.1	20.30 .23	32.0 3.0	16.03 +.02	15.7 1.0	55.07 .13	78.7 2.9	11.12 +.02	63.2 +0.1
20.0	20.15 -.07	28.9 -3.1	16.07 +.05	14.8 -0.9	54.98 -.04	75.8 -3.0	11.16 +.05	63.0 +0.3
Mar. 1.0	20.17 +.10	25.8 3.1	16.13 .08	14.0 0.7	54.99 +.05	72.8 3.0	11.22 .08	62.7 0.5
11.0	20.35 .26	22.7 3.0	16.23 .12	13.5 0.4	55.09 .15	69.8 2.8	11.32 .11	62.1 0.7
20.9	20.69 .42	19.9 2.7	16.37 .16	13.2 -0.1	55.29 .23	67.1 2.6	11.44 .15	61.3 0.9
30.9	21.18 .56	17.3 2.3	16.55 .19	13.2 +0.2	55.58 .34	64.7 2.2	11.61 .18	60.2 1.2
Apr. 9.9	21.80 +.68	15.2 -1.9	16.76 +.22	13.6 +0.5	55.96 +.42	62.7 -1.8	11.81 +.21	58.9 +1.4
19.9	22.55 .79	13.6 1.3	17.00 .25	14.3 0.9	56.41 .48	61.2 1.2	12.04 .25	57.5 1.6
29.8	23.38 .86	12.6 0.7	17.26 .28	15.3 1.2	56.93 .54	60.2 0.7	12.30 .27	55.8 1.2
May 9.8	24.27 .91	12.1 -0.1	17.56 .30	16.6 1.5	57.49 .58	59.8 -0.1	12.58 .30	54.0 1.9
19.8	25.20 .93	12.3 +0.5	17.87 .32	18.3 1.7	58.08 .60	60.0 +0.5	12.89 .31	52.0 2.0
29.8	26.14 +.93	13.0 +1.0	18.19 +.32	20.1 +2.0	58.69 +.61	60.8 +1.1	13.21 +.32	50.0 +2.0
June 8.7	27.06 .89	14.4 1.6	18.51 .32	22.2 2.1	59.30 .60	62.1 1.6	13.53 .32	48.0 2.0
18.7	27.93 .84	16.2 2.1	18.83 .31	24.4 2.2	59.88 .57	64.0 1.1	13.86 .32	46.0 1.9
28.7	28.73 .76	18.6 2.6	19.13 .29	26.6 2.3	60.43 .53	66.3 2.6	14.17 .30	44.1 1.8
July 8.6	29.44 .66	21.4 3.0	19.42 .27	28.9 2.3	60.93 .47	69.1 2.9	14.46 .28	42.3 1.7
18.6	30.05 +.54	24.6 +3.3	19.67 +.24	31.2 +2.2	61.37 +.40	72.2 +3.2	14.73 +.25	40.7 +1.5
28.6	30.53 .42	28.0 3.5	19.89 .20	33.4 2.1	61.74 .33	75.6 3.5	14.97 .22	39.4 1.5
Aug. 7.6	30.89 .29	31.6 3.7	20.08 .16	35.4 2.0	62.03 .25	79.2 3.6	15.17 .18	38.2 1.0
17.5	31.10 .15	35.4 3.8	20.22 .12	37.3 1.8	62.24 .16	82.9 3.7	15.33 .14	37.3 0.8
27.5	31.18 +.01	39.3 3.8	20.32 .08	39.0 1.6	62.36 +.08	86.6 3.7	15.44 .09	36.7 0.5
Sept. 6.5	31.13 -.12	43.1 +3.8	20.38 +.04	40.5 +1.4	62.40 .00	90.3 +3.7	15.52 +.05	36.3 +0.5
16.5	30.94 .23	46.8 3.6	20.40 .00	41.7 1.1	62.35 -.08	93.9 3.5	15.55 +.01	36.1 +0.1
26.4	30.62 .28	50.3 3.4	20.38 -.03	42.7 0.9	62.23 .16	97.4 3.3	15.54 -.02	36.2 -0.1
Oct. 6.4	30.18 .49	53.6 3.1	20.33 .06	43.5 0.6	62.03 .23	100.5 3.0	15.50 .05	36.4 0.5
16.4	29.64 .59	56.6 2.8	20.25 .09	44.0 0.4	61.77 .29	103.4 2.7	15.44 .08	36.7 0.4
26.3	29.01 -.67	59.1 +2.3	20.15 -.10	44.3 +0.2	61.45 -.34	105.9 +2.3	15.35 -.10	37.2 -0.5
Nov. 5.3	28.30 .74	61.3 1.8	20.04 .11	44.3 0.0	61.09 .38	107.9 1.8	15.24 .11	37.8 0.6
15.3	27.53 .79	62.8 1.5	19.93 .12	44.2 -0.3	60.69 .41	109.4 1.5	15.13 .11	38.4 0.6
25.3	26.72 .81	63.9 0.7	19.81 .12	43.8 0.5	60.26 .43	110.4 0.7	15.02 .11	39.0 0.6
Dec. 5.2	25.91 .81	64.3 +0.1	19.69 .11	43.3 0.6	59.83 .44	110.8 +0.1	14.90 .11	39.6 0.6
15.2	25.10 -.79	64.1 -0.5	19.59 -.10	42.6 -0.8	59.39 -.43	110.6 -0.5	14.80 -.10	40.2 -0.6
25.2	24.32 .75	63.3 1.1	19.49 .09	41.7 0.9	58.97 .41	109.9 1.1	14.71 .08	40.7 0.5
35.2	23.61 -.68	61.9 -1.6	19.42 -.07	40.7 -1.0	58.58 -.37	108.5 -1.6	14.63 -.07	41.1 -0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Piscis Australis. (Fomalhaut.)		α Pegasi. (Markab.)		α Cephei.		θ Piscium.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 22 51	[°] ['] —30 10	^h ^m 22 59	[°] ['] +14 38	^h ^m 23 14	[°] ['] +67 32	^h ^m 23 22	[°] ['] + 5 48
	^s	["]	^s	["]	^s	["]	^s	["]
Jan. 1.2	54.28 —.09	34.3 +0.3	34.51 —.09	48.2 —1.1	19.14 —.44	51.5 —1.0	41.47 —.09	29.2 —0.8
11.1	54.20 .07	33.8 0.6	34.43 .07	47.1 1.1	18.71 .41	50.2 1.5	41.38 .08	28.5 0.8
21.1	54.14 .04	33.1 0.9	34.36 .05	46.0 1.2	18.33 .36	48.4 2.0	41.31 .06	27.7 0.8
31.1	54.11 —.01	32.1 1.1	34.32 .05	44.7 1.2	18.00 .29	46.2 2.4	41.26 .04	26.9 0.7
Feb. 10.1	54.10 +.02	30.8 1.3	34.31 —.01	43.5 1.2	17.75 .20	43.6 2.7	41.23 —.02	26.2 0.6
20.1	54.13 +.05	29.3 +1.6	34.32 +.02	42.4 —1.1	17.59 —.11	40.7 —2.9	41.22 +.01	25.6 —0.5
Mar. 1.0	54.20 .08	27.6 1.8	34.36 .06	41.4 0.9	17.52 —.01	37.8 3.0	41.25 .04	25.1 0.3
11.0	54.30 .12	25.7 2.0	34.44 .09	40.6 0.7	17.56 +.09	34.8 2.9	41.30 .07	24.9 —0.1
21.0	54.43 .16	23.6 2.1	34.55 .13	40.1 0.4	17.71 .20	32.0 2.7	41.39 .11	24.8 +0.1
30.9	54.61 .19	21.4 2.2	34.71 .17	39.9 —0.1	17.96 .30	29.4 2.4	41.52 .15	25.1 0.4
Apr. 9.9	54.82 +.23	19.1 +2.3	34.90 +.21	39.9 +0.2	18.30 +.39	27.2 —2.0	41.69 +.19	25.6 +0.7
19.9	55.07 .27	16.8 2.3	35.12 .24	40.4 0.6	18.74 .48	25.4 1.6	41.89 .22	26.5 1.0
29.8	55.35 .30	14.5 2.3	35.38 .27	41.2 0.9	19.25 .55	24.0 1.1	42.13 .25	27.6 1.3
May 9.8	55.66 .32	12.2 2.2	35.67 .30	42.3 1.3	19.83 .60	23.2 —0.5	42.39 .28	29.0 1.5
19.8	56.00 .34	9.9 2.1	35.97 .31	43.8 1.6	20.45 .63	23.0 +0.1	42.69 .30	30.6 1.7
29.8	56.35 +.36	7.9 +2.0	36.30 +.32	45.5 +1.8	21.10 +.65	23.4 +0.7	43.00 +.32	32.5 +1.9
June 8.7	56.71 .36	6.0 1.8	36.62 .33	47.5 2.0	21.76 .65	24.4 1.2	43.32 .32	34.5 2.1
18.7	57.07 .36	4.4 1.5	36.95 .32	49.7 2.2	22.41 .63	25.9 1.7	43.64 .32	36.6 2.1
28.7	57.41 .34	3.1 1.2	37.27 .31	51.9 2.3	23.02 .60	27.9 2.2	43.96 .31	38.7 2.2
July 8.6	57.74 .32	2.0 0.9	37.56 .29	54.3 2.4	23.60 .55	30.4 2.6	44.26 .29	40.9 2.1
18.6	58.05 +.29	1.4 +0.5	37.84 +.26	56.7 +2.3	24.12 +.49	33.2 +3.0	44.55 +.27	43.0 +2.0
28.6	58.32 .25	1.0 +0.2	38.08 .23	59.0 2.3	24.58 .41	36.4 3.3	44.80 .24	45.0 1.9
Aug. 7.6	58.54 .21	1.0 —0.2	38.28 .19	61.3 2.2	24.95 .33	39.8 3.5	45.02 .20	46.9 1.7
17.5	58.73 .16	1.3 0.5	38.45 .16	63.4 2.0	25.25 .25	43.4 3.6	45.21 .17	48.5 1.6
27.5	58.86 .12	2.0 0.8	38.57 .12	65.3 1.8	25.45 .16	47.1 3.7	45.36 .13	50.0 1.4
Sept. 6.5	58.95 +.07	2.9 —1.0	38.65 +.06	67.1 +1.6	25.57 +.07	50.9 +3.7	45.46 +.09	51.3 +1.1
16.5	58.98 +.02	4.0 1.2	38.69 +.02	68.6 1.4	25.60 —.01	54.6 3.6	45.53 .05	52.3 0.9
26.4	58.97 —.02	5.2 1.3	38.69 —.01	69.8 1.2	25.54 .10	58.2 3.5	45.55 +.01	53.0 0.7
Oct. 6.4	58.93 .06	6.6 1.3	38.66 .04	70.9 0.9	25.40 .17	61.6 3.3	45.55 —.02	53.6 0.5
16.4	58.84 .09	7.9 1.3	38.60 .07	71.7 0.7	25.19 .25	64.7 3.0	45.51 .05	54.0 +0.2
26.3	58.73 —.11	9.2 —1.2	38.52 —.09	72.2 +0.4	24.91 —.31	67.5 +2.6	45.45 —.07	54.1 0.0
Nov. 5.3	58.60 .13	10.4 1.1	38.42 .10	72.5 +0.2	24.57 .37	69.9 2.2	45.38 .09	54.0 —0.1
15.3	58.46 .14	11.4 0.9	38.31 .11	72.5 —0.1	24.18 .41	71.8 1.7	45.28 .10	53.8 0.3
25.3	58.32 .14	12.2 0.7	38.20 .11	72.3 0.3	23.75 .44	73.1 1.1	45.18 .10	53.4 0.4
Dec. 5.2	58.18 .13	12.8 0.4	38.08 .11	71.8 0.5	23.29 .46	74.0 +0.5	45.08 .11	52.9 0.6
15.2	58.04 —.12	13.1 —0.1	37.97 —.11	71.2 —0.7	22.83 —.47	74.3 —0.1	44.97 —.10	52.3 —0.7
25.2	57.93 .11	13.1 +0.1	37.87 .10	70.4 0.9	22.36 .46	73.9 0.6	44.87 .10	51.6 0.7
35.2	57.83 .09	12.9 +0.4	37.77 —.09	69.4 —1.1	21.91 —.43	73.0 —1.2	44.78 .09	50.8 —0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Piscium.		γ Cephei.		Groombridge 4163.		♍ Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 23 34	° ' " + 5 3	h m 23 34	° ' " + 77 2	h m 23 49	° ' " + 73 49	h m 23 53	° ' " + 6 17
Jan. 1.2	36.07 -.09	47.5 -0.7	60.84 -.86	87.2 -0.3	43.95 -.67	74.7 -0.4	58.36 -.10	18.4 -0.7
11.2	35.99 .08	46.8 0.8	60.01 .81	86.3 1.2	43.30 .64	74.0 1.0	58.26 .09	17.6 0.7
21.2	35.91 .07	46.0 0.8	59.23 .73	84.9 1.7	42.68 .59	72.7 1.6	58.18 .08	16.9 0.7
31.1	35.85 .05	45.3 0.7	58.55 .62	82.9 2.2	42.12 .51	70.9 2.1	58.10 .06	16.1 0.7
Feb. 10.1	35.81 -.03	44.6 0.6	57.99 .49	80.5 2.6	41.66 .41	68.6 2.5	58.05 .04	15.5 0.6
20.1	35.80 .00	44.0 -0.5	57.57 -.33	77.7 -2.9	41.30 -.29	65.9 -2.8	58.01 -.03	14.9 -0.5
Mar. 1.0	35.81 +.03	43.6 0.3	57.32 -.16	74.8 3.0	41.07 .16	63.1 3.0	58.01 +.01	14.5 0.3
11.0	35.85 .06	43.4 -0.1	57.25 +.02	71.7 3.0	40.98 -.02	60.0 3.0	58.03 .04	14.2 -0.1
21.0	35.93 .10	43.5 +0.2	57.37 .20	68.7 2.9	41.04 +.13	57.1 2.9	58.09 .08	14.2 +0.1
31.0	36.05 .14	43.7 0.4	57.66 .38	65.8 2.7	41.25 .28	54.2 2.7	58.19 .12	14.4 0.3
Apr. 9.9	36.20 +.17	44.3 +0.7	58.13 +.55	63.3 -2.4	41.59 +.42	51.6 -2.4	58.32 +.16	14.9 +0.6
19.9	36.40 .21	45.2 1.0	58.76 .70	61.0 2.0	42.08 .54	49.4 2.0	58.50 .20	15.6 0.9
29.9	36.63 .25	46.3 1.3	59.53 .83	59.3 1.5	42.68 .65	47.5 1.6	58.72 .23	16.7 1.2
May 9.9	36.89 .27	47.7 1.5	60.41 .92	58.0 1.0	43.38 .74	46.2 1.1	58.97 .26	18.0 1.4
19.8	37.18 .30	49.3 1.7	61.38 .99	57.3 -0.4	44.16 .81	45.4 -0.5	59.24 .29	19.5 1.7
29.8	37.48 +.31	51.1 +1.9	62.40 +1.01	57.2 +0.2	44.99 +.85	45.2 +0.1	59.54 +.31	21.3 +1.9
June 8.8	37.80 .32	53.1 2.0	63.45 1.04	57.7 0.7	45.86 .87	45.5 0.6	59.86 .32	23.2 2.0
18.8	38.13 .32	55.2 2.1	64.49 1.02	58.7 1.3	46.73 .86	46.4 1.2	60.19 .32	25.3 2.1
28.7	38.45 .32	57.3 2.1	65.50 .98	60.3 1.9	47.58 .83	47.9 1.7	60.51 .32	27.4 2.1
July 8.7	38.76 .30	59.5 2.1	66.45 .91	62.4 2.3	48.40 .79	49.9 2.2	60.83 .31	29.6 2.1
18.7	39.05 +.28	61.5 +2.0	67.32 +.82	64.9 +2.7	49.16 +.72	52.3 +2.6	61.12 +.29	31.6 +2.0
28.6	39.31 .25	63.5 1.9	68.10 .72	67.8 3.1	49.84 .64	55.1 3.0	61.40 .26	33.6 1.9
Aug. 7.6	39.55 .21	65.3 1.7	68.75 .59	71.1 3.4	50.43 .54	58.2 3.3	61.64 .23	35.5 1.8
17.6	39.74 .18	66.9 1.5	69.28 .46	74.6 3.6	50.92 .44	61.6 3.5	61.86 .19	37.2 1.6
27.6	39.90 .14	68.3 1.3	69.67 .32	78.3 3.8	51.31 .33	65.3 3.7	62.03 .16	38.7 1.4
Sept. 6.5	40.02 +.10	69.5 +1.1	69.92 +.18	82.1 +3.8	51.58 +.21	69.0 +3.8	62.17 +.12	40.0 +1.2
16.5	40.10 .06	70.5 0.8	70.02 +.03	86.0 3.8	51.74 +.10	72.8 3.8	62.27 .08	41.0 0.9
26.5	40.14 +.02	71.2 0.6	69.98 -.11	89.8 3.7	51.78 -.02	76.6 3.7	62.33 .04	41.8 0.7
Oct. 6.4	40.14 -.01	71.7 0.4	69.80 .25	93.5 3.6	51.70 .13	80.3 3.6	62.35 +.01	42.4 0.5
16.4	40.12 .04	72.0 +0.2	69.48 .38	97.0 3.3	51.52 .24	83.7 3.4	62.35 -.02	42.8 0.3
26.4	40.07 -.06	72.1 0.0	69.03 -.50	100.2 +3.0	51.23 -.34	87.0 +3.1	62.32 -.04	42.9 +0.1
Nov. 5.4	40.00 .08	72.0 -0.2	68.47 .61	103.0 2.6	50.84 .43	89.8 2.7	62.26 .06	42.9 0.1
15.3	39.92 .09	71.8 0.3	67.81 .71	105.4 2.2	50.37 .51	92.3 2.2	62.19 .08	42.7 0.3
25.3	39.82 .10	71.4 0.5	67.06 .78	107.3 1.6	49.82 .58	94.3 1.7	62.10 .09	42.4 0.4
Dec. 5.3	39.72 .10	70.8 0.6	66.24 .84	108.7 1.1	49.21 .63	95.7 1.2	62.01 .10	41.9 0.5
15.3	39.62 -.10	70.2 -0.7	65.38 -.87	109.5 +0.4	48.56 -.66	96.6 +0.6	61.91 -.10	41.4 -0.6
25.2	39.52 .10	69.5 0.7	64.51 .86	109.6 -0.2	47.90 .67	96.9 0.0	61.81 .10	40.7 0.7
35.2	39.43 -.09	68.8 -0.8	63.66 -.84	109.1 -0.7	47.23 -.66	96.5 -0.6	61.70 .10	40.0 -0.7

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cassiop.	22 Androm.	σ Androm.	ϵ Ceti.	6 Urs. Min. S. P.	44 Piscium.	π Androm.	α Cassiop.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	31 25	44 30	53 47	99 24	358 17	88 38	56 51	42 17
	h m 0 3	h m 0 4	h m 0 12	h m 0 14	h m 0 13	h m 0 20	h m 0 31	h m 0 38
Jan. 0.3	36.85 - .32	54.54 - .21	53.53 - .15	7.91 - .09	103.53 + 7.52	4.57 - .12	19.56 - .18	55.59 - .22
10.2	36.54 - .29	54.34 - .19	53.38 - .15	7.82 - .10	111.02 7.37	4.46 - .10	19.40 - .16	55.37 - .22
20.2	36.26 - .26	54.16 - .17	53.24 - .14	7.72 - .09	118.27 6.99	4.37 - .08	19.26 - .14	55.15 - .21
30.2	36.01 - .25	53.99 - .15	53.10 - .14	7.64 - .07	124.99 + 6.31	4.29 - .07	19.12 - .13	54.96 - .19
Aug. 26.6	41.70 + .25	58.67 + .20	57.36 + .20	11.40 + .18	61.84 - 3.27	8.00 + .18	23.16 + .21	59.50 + .26
Sept. 5.5	41.92 - .18	58.84 - .15	57.53 - .15	11.55 - .14	59.07 2.27	8.15 - .14	23.35 - .18	59.74 - .21
15.5	42.06 - .11	58.97 - .10	57.67 - .11	11.67 - .10	57.30 1.25	8.28 - .12	23.51 - .14	59.92 - .16
25.5	42.14 + .06	59.05 - .06	57.75 - .07	11.75 - .06	56.58 - 0.18	8.36 - .08	23.62 - .10	60.06 - .11
Oct. 5.5	42.18 - .00	59.09 + .02	57.80 + .03	11.80 + .03	56.94 + 0.92	8.42 - .04	23.69 - .06	60.14 - .07
15.4	42.14 - .05	59.08 - .02	57.82 - .00	11.81 - .00	58.43 + 2.03	8.44 + .01	23.73 + .02	60.19 + .02
25.4	42.07 - .11	59.04 - .06	57.80 - .04	11.80 - .03	61.00 3.10	8.44 - .01	23.73 - .01	60.20 - .02
Nov. 4.4	41.92 - .16	58.96 - .10	57.74 - .07	11.76 - .06	64.64 4.14	8.41 - .04	23.71 - .04	60.15 - .06
14.4	41.74 - .20	58.84 - .13	57.66 - .10	11.69 - .08	69.28 5.10	8.35 - .06	23.64 - .07	60.07 - .10
24.3	41.52 - .24	58.70 - .15	57.55 - .12	11.61 - .09	74.83 5.93	8.27 - .08	23.56 - .09	59.96 - .13
Dec. 4.3	41.27 - .27	58.53 - .17	57.43 - .13	11.51 - .10	81.14 + 6.62	8.19 - .09	23.46 - .11	59.82 - .16
14.3	40.98 - .30	58.36 - .18	57.29 - .14	11.42 - .10	88.07 7.12	8.10 - .09	23.34 - .13	59.65 - .18
24.2	40.69 - .39	58.17 - .19	57.14 - .15	11.31 - .11	95.38 7.39	8.01 - .10	23.21 - .14	59.46 - .20
34.2	40.39 - .30	57.97 - .19	56.99 - .15	11.21 - .10	102.85 + 7.47	7.91 - .10	23.06 - .14	59.26 - .21
Mean Solar Date.	δ Piscium.	γ Cassiop.	μ Androm.	43 Cephei.	κ Tucanæ.	ζ Piscium.	κ Octantis, S. P.	ν Androm.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	82 59	29 51	52 4	4 18	159 26	86 56	184 45	49 7
	h m 0 43	h m 0 50	h m 0 50	h m 0 54	h m 1 12	h m 1 12	h m 1 23	h m 1 30
Jan. 0.3	17.54 - .10	25.53 - .32	58.89 - .17	27.36 - 2.75	16.95 - .55	26.62 - .09	60.54 + 2.92	42.05 - .15
10.3	17.44 - .11	25.21 - .33	58.73 - .16	24.61 2.73	16.41 - .54	26.51 - .10	63.48 2.92	41.90 - .17
20.3	17.33 - .11	24.88 - .33	58.57 - .16	21.89 2.69	15.87 - .53	26.40 - .11	66.40 2.86	41.71 - .19
30.2	17.23 - .10	24.58 - .30	58.40 - .16	19.23 - 2.65	15.35 - .50	26.29 - .11	69.20 + 2.71	41.50 - .18
Sept. 5.6	20.96 + .17	30.26 + .28	62.67 + .20	45.87 + 1.54	20.87 + .39	29.77 + .20	58.43 - 1.44	45.55 + .26
15.5	21.11 - .13	30.51 - .22	62.85 - .16	47.25 1.17	21.22 - .30	29.95 - .16	57.18 1.03	45.80 - .22
25.5	21.23 - .10	30.71 - .16	62.99 - .12	48.21 - .75	21.46 - .20	30.09 - .13	56.38 - .08	45.99 - .17
Oct. 5.5	21.31 - .07	30.83 - .10	63.10 - .08	48.76 + .34	21.59 + .08	30.20 - .09	56.02 - .11	46.16 - .13
15.5	21.36 - .04	30.90 + .04	63.15 - .04	48.89 - .09	21.61 - .03	30.27 - .07	56.15 + .38	46.28 - .10
25.4	21.39 + .01	30.92 - .02	63.19 + .01	48.58 - .53	21.53 - .14	30.32 + .03	56.79 + .88	46.35 + .07
Nov. 4.4	21.38 - .02	30.86 - .09	63.18 - .02	47.83 - .97	21.33 - .24	30.34 - .00	57.92 1.38	46.40 + .03
14.4	21.34 - .04	30.75 - .14	63.13 - .05	46.65 1.37	21.05 - .33	30.32 - .03	59.55 1.82	46.40 - .01
24.4	21.28 - .06	30.58 - .19	63.06 - .08	45.09 1.75	20.67 - .41	30.29 - .05	61.56 2.21	46.37 - .05
Dec. 4.3	21.20 - .08	30.37 - .23	62.96 - .11	43.16 2.10	20.23 - .46	30.23 - .07	63.96 2.53	46.29 - .08
14.3	21.12 - .09	30.12 - .27	62.84 - .13	40.89 - 2.39	19.74 - .51	30.16 - .08	66.62 + 2.75	46.20 - .12
24.3	21.02 - .10	29.83 - .30	62.69 - .15	38.38 2.58	19.21 - .54	30.07 - .09	69.46 2.90	46.07 - .14
34.2	20.92 - .10	29.53 - .32	62.54 - .16	35.73 - 2.69	18.66 - .55	29.98 - .10	72.41 + 2.96	45.93 - .16

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Piscium.	ν Piscium.	ζ Ceti.	γ Androm.	β Trianguli.	δ Urs. Min., S. P.	γ Trianguli.	ϵ Ceti.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	78 23	85 2	100 51	48 10	55 30	348 2	56 38	96 54
	I 31	I 36	I 46	I 57	2 3	2 9	2 11	2 11
Jan. 0.3	35.77 -11	1.90 -09	20.54 -10	31.56 -14	22.06 -12	14.59+1.03	8.68 -11	48.73 -09
10.3	35.66 .12	1.80 .11	20.43 .11	31.39 .17	21.93 .16	15.64 1.08	8.56 .14	48.64 .11
20.2	35.54 .12	1.69 .12	20.32 .12	31.23 .18	21.77 .16	16.74 1.12	8.41 .15	48.53 .12
30.2	35.42 .12	1.57 .12	20.19 .13	31.04 .19	21.62 .17	17.87 1.11	8.25 .16	48.39 .12
Feb. 9.2	35.31 .12	1.46 .11	20.05 .13	30.84 .18	21.45 .17	18.97 1.08	8.09 .17	48.26 .13
19.2	35.19 -12	1.35 -10	19.93 -12	30.67 -17	21.29 -16	20.02+1.03	7.92 -16	48.13 -12
Sept. 25.6	39.17 +15	5.21 +15	23.64 +16	35.36 +22	25.64 +20	11.57- .56	12.17 +21	51.68 +18
Oct. 5.5	39.31 .12	5.34 .12	23.78 .13	35.56 .18	25.83 .17	11.07 .43	12.37 .18	51.84 .15
15.5	39.41 .08	5.45 .09	23.89 .10	35.71 .14	25.98 .13	10.73 .28	12.53 .14	51.96 .12
25.5	39.47 +05	5.50 +06	23.97 +07	35.84 +10	26.10 +10	10.54- .10	12.66 +11	52.07 +09
Nov. 4.5	39.51 +03	5.55 +03	24.02 .04	35.91 .06	26.19 .07	10.54+ .09	12.74 .08	52.13 .06
14.4	39.53 .00	5.57 .00	24.03 +01	35.95 +02	26.23 +03	10.72 .28	12.81 .05	52.17 +03
24.4	39.50 -02	5.56 -03	24.02 -02	35.96 -02	26.24 -01	11.10 .46	12.83 +01	52.19 .00
Dec. 4.4	39.46 .05	5.51 .05	23.98 .04	35.91 .06	26.23 .04	11.63 .63	12.82 -03	52.17 -03
14.3	39.40 -07	5.45 -07	23.92 -07	35.85 -09	26.17 -07	12.35+ .79	12.77 -06	52.11 -06
24.3	39.32 .09	5.37 .08	23.84 .10	35.74 .12	26.09 .10	13.20 .92	12.69 .09	52.05 .08
34.3	39.23 -10	5.28 -10	23.74 -11	35.59 -15	25.97 -13	14.19+1.04	12.59 -12	51.96 -09
Mean Solar Date.	δ Hydri.	μ Hydri.	δ Ceti.	θ Persei.	σ Arietis.	δ Cephei.	ϵ Arietis.	β Persei. (Algol.)
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	159 8	169 34	90 7	41 13	75 21	11 0	69 5	49 27
	2 19	2 33	2 34	2 37	2 45	2 52	2 53	3 1
Jan. 0.3	56.90 -52	57.62-1.12	10.21 -08	6.84 -14	46.10 -07	18.31- .69	17.01 -07	25.28 -09
10.3	56.35 .55	56.44 1.22	10.12 .10	6.67 .18	46.02 .09	17.55 .82	16.93 .09	25.18 .13
20.3	55.78 .57	55.19 1.25	10.01 .12	6.47 .20	45.91 .11	16.67 .93	16.82 .12	25.03 .17
30.2	55.19 .57	53.93 1.25	9.88 .13	6.26 .22	45.79 .13	15.69 .99	16.69 .14	24.85 .19
Feb. 9.2	54.62 .56	52.69 1.23	9.75 .13	6.03 .23	45.65 .14	14.69 1.01	16.55 .15	24.66 .20
19.2	54.06 -54	51.46-1.19	9.61 -14	5.79 -24	45.51 -14	13.67-1.00	16.39 -14	24.46 -20
Sept. 25.6	59.09 +35	58.60+ .70	13.02 +20	10.59 +29	49.01 +22	25.68+ .94	19.96 +23	28.56 +28
Oct. 5.6	59.39 .25	59.18 .49	13.20 .17	10.87 .26	49.22 .16	26.56 .82	20.17 .20	28.83 .25
15.5	59.59 .15	59.58 .28	13.36 .14	11.12 .22	49.39 .19	27.31 .68	20.37 .18	29.08 .22
25.5	59.69 +05	59.74+ .03	13.49 +11	11.30 +17	49.54 +13	27.91+ .51	20.54 +15	29.29 +18
Nov. 4.5	59.68 -06	59.67- .18	13.59 .09	11.45 .12	49.66 .11	28.32 .32	20.67 .12	29.45 .14
14.5	59.56 .18	59.38 .40	13.66 .05	11.55 .08	49.75 .08	28.55+ .16	20.77 .08	29.57 .11
24.4	59.32 .28	58.87 .61	13.69 +02	11.61 +03	49.80 .04	28.64- .02	20.83 .05	29.66 .07
Dec. 4.4	59.00 .36	58.17 .78	13.70 -01	11.61 -02	49.82 +01	28.50 .23	20.86 +02	29.71 +03
14.4	58.60 -44	57.31- .96	13.67 -04	11.56 -07	49.82 -02	28.16- .42	20.86 -01	29.71 -01
24.4	58.13 .49	56.28 1.09	13.62 .06	11.47 .11	49.78 .05	27.65 .59	20.82 .04	29.66 .06
34.3	57.61 -54	55.15-1.17	13.55 -08	11.34 -16	49.71 -08	26.98- .73	20.76 -08	29.57 -11

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ϵ Hydri.	ρ Octantis, S. P.	f Tauri.	γ Camelop.	γ Hydri.	ϵ Persei.	α^1 Tauri.	ϵ Persei.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	167 46 3 18	185 53 3 19	77 25 3 25	18 59 3 39	164 33 3 48	50 17 3 50	68 12 3 58	42 34 4 1
Jan. 0.4	38.57-.86	9.11+2.16	9.13-.06	25.57-.85	55.57-.60	54.03-.05	34.31-.08	8.48-.05
10.3	37.64-.98	11.42 2.37	9.06-.08	25.26-.36	54.90-.71	53.95-.09	34.27-.07	8.41-.10
20.3	36.61 1.06	13.85 2.49	8.97-.11	24.85-.44	54.15-.80	53.84-.13	34.18-.10	8.29-.15
30.3	35.52 1.08	16.39 2.54	8.85-.13	24.37-.50	53.31-.85	53.68-.17	34.07-.12	8.11-.19
Feb. 9.3	34.42 1.10	18.93 2.55	8.72-.14	23.84-.54	52.45-.88	53.50-.19	33.93-.14	7.90-.22
19.3	33.32-1.07	21.49+2.50	8.57-.15	23.28-.56	51.54-.91	53.31-.20	33.78-.16	7.68-.24
29.2	32.25-1.05	23.92+2.39	8.41-.16	22.72-.55	50.63-.90	53.10-.21	33.60-.17	7.43-.25
Oct. 5.6	38.03+.61	18.22-1.00	11.93+.23	30.68+.64	54.38+.56	57.18+.31	36.99+.28	11.79+.34
15.6	38.55-.43	17.38-.67	12.15-.20	31.27-.56	54.90-.46	57.47-.28	37.28-.26	12.12-.32
25.5	38.89+.24	16.89-.27	12.32+.17	31.80+.46	55.29+.33	57.73+.25	37.52+.22	12.42+.29
Nov. 4.5	39.03+.06	16.84+.17	12.48-.14	32.22-.37	55.55-.18	57.96-.21	37.72-.19	12.70-.25
14.5	39.00-.13	17.22-.59	12.62-.11	32.55-.28	55.65+.03	58.14-.17	37.89-.16	12.93-.20
24.5	38.77-.32	18.02 1.00	12.72-.08	32.77-.16	55.61-.11	58.31-.13	38.03-.12	13.10-.15
Dec. 4.4	38.36-.50	19.22 1.39	12.76-.05	32.87+.05	55.43-.25	58.41-.09	38.13-.08	13.24-.10
14.4	37.77-.67	20.79+1.74	12.79+.01	32.87-.06	55.10-.41	58.47+.04	38.19+.05	13.31+.04
24.4	37.03-.81	22.69 2.03	12.79-.02	32.74-.19	54.61-.54	58.48-.01	38.22+.01	13.32-.01
34.4	36.15-.92	24.85+2.26	12.74-.06	32.49-.29	54.02-.64	58.44-.06	38.20-.04	13.28-.07
Mean Solar Date.	α^1 Eridani.	η Urs. Min., S. P.	δ Mensæ.	m Persei.	τ Tauri.	i Tauri.	ζ Aurigæ.	β Eridani.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	97 7 4 6	346 0 4 20	170 27 4 24	47 10 4 26	67 15 4 36	71 20 4 45	49 5 4 55	95 13 5 2
Jan. 0.4	48.84-.02	28.59+.46	68.19-.92	7.77-.01	1.84+.01	19.09+.02	14.55+.01	45.90+.02
10.4	48.79-.06	29.12-.61	67.17 1.11	7.73-.06	1.83-.03	19.09-.02	14.55-.03	45.90-.02
20.4	48.71-.09	29.82-.75	65.98 1.26	7.64-.11	1.77-.07	19.04-.06	14.49-.08	45.85-.06
30.3	48.60-.12	30.62-.84	64.65 1.38	7.50-.16	1.67-.11	18.96-.10	14.39-.13	45.76-.09
Feb. 9.3	48.46-.14	31.50-.91	63.23 1.45	7.32-.19	1.55-.14	18.84-.13	14.23-.17	45.65-.13
19.3	48.31-.16	32.43+.94	61.76-1.50	7.12-.21	1.39-.16	18.69-.16	14.04-.20	45.51-.16
29.3	48.14-.17	33.38-.93	60.24 1.50	6.91-.22	1.22-.17	18.53-.16	13.84-.21	45.34-.17
Mar. 10.2	47.98-.16	34.30+.87	58.76-1.45	6.69-.22	1.05-.18	18.36-.18	13.62-.22	45.17-.18
Oct. 15.6	51.24+.22	27.62-.75	63.47+.86	11.07+.32	4.59+.27	21.70+.27	17.57+.35	47.94+.25
25.6	51.45+.20	26.94-.61	64.22+.65	11.38+.30	4.86+.25	21.96+.25	17.90+.32	48.18+.24
Nov. 4.6	51.64-.17	26.40-.47	64.77-.43	11.66-.27	5.10-.23	22.21-.23	18.21-.30	48.42-.22
14.5	51.78-.14	26.01-.31	65.08+.19	11.90-.23	5.31-.20	22.43-.20	18.48-.26	48.61-.19
24.5	51.91-.11	25.78-.15	65.15-.05	12.11-.18	5.48-.16	22.59-.16	18.72-.22	48.79-.16
Dec. 4.5	52.00-.07	25.72+.02	64.97-.31	12.27-.13	5.62-.13	22.74-.13	18.90-.17	48.94-.13
14.5	52.04+.03	25.83+.20	64.53-.56	12.36+.08	5.71+.09	22.86+.09	19.06+.12	49.05+.09
24.4	52.05-.01	26.12-.38	63.86-.80	12.42+.03	5.77-.05	22.92-.05	19.14-.07	49.10-.05
34.4	52.03-.04	26.59+.54	62.94-1.02	12.42-.03	5.79+.01	22.95+.01	19.18+.01	49.13+.01

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Cephei.		μ Capricorni.		79 Draconis.		α Aquarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 21 40	° ' " +70 49	h m 21 47	° ' " -14 2	h m 21 51	° ' " +73 12	h m 22 0	° ' " - 0 49
	"	"	"	"	"	"	"	"
Jan. 1.1	20.00 -.43	68.3 -2.1	37.21 -.04	35.8 -0.2	29.47 -.54	49.4 -2.0	26.13 -.05	33.5 -0.7
11.1	19.60 .35	65.9 2.6	37.19 -.01	35.9 -0.1	28.98 .44	47.2 2.4	26.09 -.02	34.3 0.7
21.1	19.31 .24	63.2 2.9	37.20 +.02	35.9 +0.1	28.60 .32	44.6 2.8	26.09 +.01	34.9 0.6
31.1	19.12 .13	60.2 3.1	37.24 .05	35.8 0.2	28.34 .20	41.6 3.0	26.11 .03	35.6 0.6
Feb. 10.0	19.05 -.01	57.0 3.2	37.30 .08	35.5 0.4	28.21 -.06	38.5 3.2	26.15 .06	36.1 0.4
20.0	19.09 +.11	53.8 -3.1	37.40 +.11	35.0 +0.6	28.21 +.08	35.3 -3.1	26.23 +.09	36.4 -0.2
Mar. 1.0	19.26 .23	50.7 3.0	37.53 .14	34.4 0.7	28.36 .22	32.2 3.0	26.34 .12	36.5 0.0
10.9	19.55 .34	47.9 2.7	37.69 .18	33.6 0.9	28.64 .35	29.3 2.8	26.48 .16	36.4 +0.2
20.9	19.95 .45	45.4 2.3	37.88 .21	32.5 1.1	29.05 .47	26.7 2.4	26.65 .19	36.1 0.5
30.9	20.45 .54	43.3 1.8	38.10 .24	31.3 1.3	29.58 .58	24.5 1.9	26.86 .22	35.5 0.8
Apr. 9.9	21.03 +.61	41.8 -1.2	38.35 +.26	29.9 +1.5	30.21 +.67	22.8 -1.4	27.09 +.25	34.6 +1.0
19.8	21.67 .67	40.8 -0.6	38.63 .29	28.3 1.6	30.92 .74	21.7 0.8	27.35 .27	33.5 1.3
29.8	22.37 .70	40.5 0.0	38.93 .31	26.7 1.7	31.69 .78	21.1 -0.2	27.64 .29	32.1 1.5
May 9.8	23.08 .72	40.8 +0.6	39.24 .32	24.9 1.8	32.49 .80	21.2 +0.4	27.94 .31	30.4 1.7
19.8	23.80 .71	41.7 1.2	39.57 .33	23.1 1.8	33.30 .80	21.9 1.0	28.25 .32	28.6 1.9
29.7	24.50 +.68	43.2 +1.7	39.90 +.33	21.3 +1.8	34.09 +.77	23.2 +1.6	28.57 +.32	26.7 +2.0
June 8.7	25.17 .63	45.2 2.3	40.22 .32	19.6 1.7	34.84 .72	25.1 2.1	28.89 .31	24.7 2.0
18.7	25.77 .57	47.7 2.7	40.53 .30	17.9 1.6	35.54 .65	27.4 2.6	29.19 .30	22.7 2.0
28.6	26.30 .49	50.6 3.1	40.83 .28	16.4 1.4	36.15 .57	30.2 3.0	29.48 .28	20.7 2.0
July 8.6	26.75 .40	53.8 3.4	41.10 .25	15.1 1.2	36.68 .47	33.3 3.3	29.75 .25	18.8 1.8
18.6	27.10 +.30	57.3 +3.6	41.33 +.22	14.0 +1.0	37.09 +.36	36.8 +3.5	29.98 +.22	17.0 +1.7
28.6	27.34 .19	61.0 3.7	41.53 .17	13.1 0.8	37.39 .24	40.4 3.7	30.18 .18	15.4 1.5
Aug. 7.5	27.48 +.08	64.8 3.8	41.68 .13	12.4 0.5	37.57 +.12	44.1 3.8	30.33 .13	13.9 1.3
17.5	27.50 -.03	68.6 3.7	41.79 .08	12.0 0.3	37.63 .00	48.0 3.8	30.44 .09	12.7 1.1
27.5	27.42 .14	72.3 3.7	41.85 +.04	11.8 +0.1	37.56 -.13	51.7 3.7	30.51 .05	11.7 0.9
Sept. 6.5	27.23 -.24	75.9 +3.5	41.86 .00	11.8 -0.1	37.38 -.24	55.4 +3.6	30.54 +.01	10.9 +0.7
16.4	26.95 .33	79.3 3.2	41.84 -.04	12.0 0.2	37.08 .35	58.9 3.3	30.52 -.03	10.4 0.5
26.4	26.57 .41	82.3 2.9	41.78 .07	12.3 0.4	36.68 .44	62.1 3.1	30.47 .06	10.0 0.3
Oct. 6.4	26.12 .48	85.1 2.5	41.69 .10	12.7 0.5	36.19 .53	65.0 2.7	30.40 .09	9.8 +0.1
16.3	25.61 .54	87.4 2.1	41.58 .12	13.2 0.5	35.63 .60	67.5 2.3	30.29 .11	9.8 -0.1
26.3	25.04 -.58	89.3 +1.6	41.45 -.13	13.7 -0.5	35.00 -.65	69.6 +1.8	30.18 -.12	10.0 -0.2
Nov. 5.3	24.44 .61	90.6 1.1	41.32 .13	14.3 0.5	34.32 .69	71.1 1.3	30.05 .12	10.3 0.4
15.3	23.82 .62	91.4 +0.5	41.18 .13	14.8 0.5	33.61 .71	72.1 0.7	29.93 .12	10.7 0.5
25.2	23.20 .61	91.6 -0.1	41.06 .12	15.3 0.5	32.90 .70	72.5 +0.1	29.81 .11	11.3 0.6
Dec. 5.2	22.60 .58	91.2 0.7	40.95 .10	15.8 0.4	32.20 .68	72.3 -0.5	29.70 .10	11.9 0.6
15.2	22.03 -.54	90.2 -1.3	40.86 -.08	16.1 -0.3	31.54 -.64	71.5 -1.1	29.61 -.08	12.5 -0.7
25.1	21.52 .48	88.6 1.8	40.80 .05	16.4 0.2	30.92 .58	70.1 1.7	29.54 .06	13.2 0.7
35.1	21.08 -.41	86.5 -2.3	40.76 -.03	16.6 0.1	30.38 -.50	68.2 -2.1	29.49 -.04	14.0 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Gruis.		θ Aquarii.		π Aquarii.		η Aquarii.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 22 I	° ' " -47 27	h m 22 II	° ' " -8 17	h m 22 19	° ' " +0 50	h m 22 30	° ' " -0 38
Jan. 1.1	40.48 -10	66.1 +1.3	20.46 -05	69.0 -0.4	57.63 -06	56.8 -0.7	0.46 -06	74.8 -0.7
11.1	40.41 .05	64.6 1.6	20.42 -03	69.4 0.3	57.58 .04	56.0 0.7	0.40 .04	75.5 0.7
21.1	40.38 -01	62.8 1.9	20.41 .00	69.7 0.2	57.55 -01	55.3 0.7	0.37 -02	76.1 0.6
31.1	40.39 +03	60.8 2.2	20.42 +03	69.8 -0.1	57.55 +01	54.6 0.6	0.37 +01	76.7 0.5
Feb. 10.0	40.45 .08	58.5 2.4	20.46 .06	69.9 +0.1	57.58 .04	54.1 0.5	0.38 .03	77.1 0.4
20.0	40.55 +12	56.0 +2.5	20.53 +09	69.7 +0.2	57.64 +07	53.7 -0.3	0.43 +06	77.4 -0.2
Mar. 1.0	40.70 .17	53.5 2.6	20.64 .12	69.4 0.4	57.73 .10	53.4 -0.1	0.51 .10	77.6 0.0
11.0	40.89 .21	50.8 2.6	20.77 .15	68.8 0.7	57.85 .14	53.4 +0.1	0.62 .13	77.5 +0.2
20.9	41.12 .26	48.2 2.6	20.93 .18	68.1 0.9	58.00 .17	53.7 0.4	0.77 .16	77.1 0.5
30.9	41.40 .30	45.6 2.6	21.13 .21	67.1 1.1	58.19 .20	54.3 0.7	0.94 .19	76.5 0.8
Apr. 9.9	41.72 +34	43.0 +2.5	21.36 +24	65.8 +1.3	58.41 +23	55.1 +1.0	1.16 +23	75.6 +1.0
19.8	42.07 .37	40.6 2.3	21.61 .27	64.4 1.5	58.66 .26	56.2 1.2	1.40 .26	74.4 1.3
29.8	42.46 .40	38.4 2.1	21.89 .29	62.8 1.7	58.93 .28	57.5 1.5	1.67 .28	73.0 1.5
May 9.8	42.87 .42	36.4 1.9	22.20 .31	61.0 1.8	59.23 .30	59.1 1.7	1.96 .30	71.4 1.7
19.8	43.29 .43	34.6 1.6	22.51 .32	59.2 1.9	59.54 .31	60.9 1.9	2.27 .31	69.6 1.9
29.7	43.73 +43	33.2 +1.3	22.84 +32	57.3 +1.9	59.86 +32	62.9 +2.0	2.59 +32	67.6 +2.0
June 8.7	44.16 .43	32.1 0.9	23.16 .32	55.3 1.9	60.18 .32	64.9 2.1	2.91 .32	65.6 2.0
18.7	44.58 .41	31.4 0.5	23.47 .31	53.4 1.8	60.49 .31	67.0 2.1	3.22 .31	63.5 2.0
28.7	44.98 .38	31.0 +0.1	23.77 .29	51.6 1.7	60.79 .29	69.1 2.0	3.53 .29	61.5 2.0
July 8.6	45.35 .34	31.1 -0.3	24.05 .26	50.0 1.5	61.06 .26	71.0 1.9	3.81 .27	59.5 1.9
18.6	45.67 +30	31.6 -0.6	24.29 +23	48.5 +1.4	61.31 +23	72.9 +1.8	4.06 +24	57.7 +1.8
28.6	45.95 .24	32.4 1.0	24.50 .19	47.3 1.2	61.52 .19	74.7 1.7	4.28 .20	56.0 1.6
Aug. 7.5	46.16 .19	33.6 1.3	24.67 .15	46.2 0.9	61.69 .15	76.2 1.5	4.46 .16	54.5 1.4
17.5	46.32 .12	35.0 1.5	24.80 .11	45.4 0.7	61.82 .11	77.6 1.2	4.60 .12	53.2 1.2
27.5	46.41 +06	36.6 1.7	24.88 .06	44.8 0.5	61.91 .06	78.7 1.0	4.70 .07	52.2 0.9
Sept. 6.5	46.43 .00	38.4 -1.8	24.92 +02	44.5 +0.3	61.95 +02	79.6 +0.8	4.75 +03	51.3 +0.7
16.4	46.40 -06	40.3 1.8	24.92 -02	44.3 +0.1	61.95 -01	80.3 0.6	4.77 .00	50.8 0.5
26.4	46.31 .11	42.1 1.8	24.88 .05	44.4 -0.1	61.92 .05	80.8 0.4	4.75 -04	50.4 0.3
Oct. 6.4	46.17 .16	43.9 1.7	24.81 .08	44.6 0.3	61.86 .08	81.0 +0.2	4.69 .07	50.2 +0.1
16.4	45.99 .19	45.5 1.5	24.71 .11	44.9 0.4	61.77 .10	81.1 0.0	4.61 .09	50.2 -0.1
26.3	45.79 -21	46.8 -1.2	24.60 -12	45.3 -0.5	61.67 -11	81.0 -0.2	4.51 -10	50.4 -0.2
Nov. 5.3	45.57 .22	47.8 0.8	24.48 .12	45.8 0.5	61.55 .12	80.7 0.3	4.40 .11	50.6 0.4
15.3	45.35 .22	48.4 0.4	24.36 .12	46.3 0.5	61.43 .12	80.3 0.4	4.29 .11	51.1 0.5
25.2	45.13 .21	48.7 0.1	24.24 .11	46.9 0.5	61.31 .11	79.8 0.5	4.17 .11	51.6 0.6
Dec. 5.2	44.93 .19	48.6 +0.3	24.13 .10	47.4 0.5	61.20 .10	79.2 0.6	4.06 .10	52.2 0.6
15.2	44.76 -16	48.1 +0.7	24.03 -09	48.0 -0.5	61.11 -09	78.6 -0.7	3.96 -09	52.8 -0.7
25.2	44.62 .12	47.1 1.1	23.96 .07	48.4 0.5	61.03 .07	77.8 0.7	3.88 .08	53.5 0.7
35.1	44.51 -09	45.9 +1.4	23.90 -05	48.9 -0.4	60.96 -05	77.1 -0.7	3.81 -06	54.2 -0.7

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

	δ Muscae	ϵ Virginis	α Can. Ven	α Octantis	B. A. C. 4536	m Virginis	θ Apodis	π Hydræ
Mean Solar Time	160 59 h m 12 55	78 29 h m 12 57	48 53 h m 13 12	175 15 h m 13 24	52 17 h m 13 30	98 11 h m 13 36	166 18 h m 13 55	116 11 h m 14 0
Feb 29 6	11.06 +.45	2.21 +.20	55.47 +.25	16.34 +1.90	11.64 +.25	11.07 +.23	15.28 +.83	26.62 +.24
Mar 10 6	11.46 .35	2.38 .16	55.70 .20	18.06 1.54	11.88 .21	11.28 .19	16.05 .71	27.86 .23
20 6	11.76 .25	2.52 .12	55.87 .15	19.41 1.17	12.07 .16	11.45 .16	16.70 .59	29.09 .20
30 5	11.97 .16	2.62 .08	55.99 .10	20.40 .79	12.20 .12	11.60 .13	17.23 .47	29.27 .17
Apr 9 5	12.07 +.06	2.68 .05	56.06 .06	20.99 .40	12.30 .08	11.72 .10	17.63 .33	29.41 .13
19 5	12.09 .03	2.71 +.02	56.09 +.01	21.21 +.02	12.34 +.03	11.80 +.07	17.89 +.19	29.53 +.10
29 4	12.01 .13	2.71 .01	56.08 .03	21.03 .37	12.36 .00	11.84 .04	18.02 +.06	29.61 .07
May 9 4	11.84 .21	2.70 .03	56.02 .06	20.47 .74	12.33 .04	11.87 +.01	18.01 .07	29.66 .04
19 4	11.59 .28	2.66 .05	55.93 .09	19.55 1.09	12.27 .07	11.87 .01	17.89 .19	29.69 +.01
29 4	11.29 .35	2.59 .07	55.83 .12	18.30 1.40	12.18 .10	11.85 .03	17.63 .31	29.69 .01
June 8 3	10.90 .41	2.51 .08	55.69 .14	16.76 1.68	12.07 .12	11.81 .05	17.27 .43	29.67 .01
18 3	10.47 .45	2.43 .09	55.54 .16	14.94 1.92	11.94 .14	11.75 .08	16.78 .52	29.60 .07
28 3	9.99 .47	2.33 .10	55.37 .17	12.94 2.10	11.80 .15	11.66 .09	16.23 .60	29.53 .09
July 8 3	9.53 .45	2.23 .10	55.19 .18	10.75 2.24	11.63 .16	11.57 .10	15.59 .67	29.43 .10
	δ Bootis	ϵ Virginis	α Urs. Min	α Octantis	λ Bootis	λ Virginis	μ Hydri. S. P.	ϵ Apodis
Mean Solar Time	64 25 h m 14 5	99 47 h m 14 7	11 58 h m 14 9	173 11 h m 14 10	43 26 h m 14 12	102 54 h m 14 13	190 26 h m 14 33	168 36 h m 14 35
Mar 20 6	41.82 +.20	23.07 +.20	22.49 +.59	23.70 +1.23	28.73 +.22	31.10 +.20	47.40 .52	2.45 +.20
30 6	42.05 .15	23.24 .16	22.90 .50	24.87 .90	28.92 .17	31.28 .17	47.45 .67	3.20 .75
Apr 9 5	42.18 .11	23.39 .13	23.27 .19	25.74 .73	29.08 .13	31.43 .14	47.06 .50	3.73 .59
19 5	42.27 .06	23.50 .10	23.37 +.01	26.32 .44	29.18 .07	31.56 .11	47.05 .51	4.45 .44
29 5	42.33 .04	23.59 .07	23.30 .17	26.65 +.18	29.22 +.03	31.65 .08	47.44 .11	4.80 .18
May 9 4	42.40 .04	23.63 +.04	23.03 .35	26.60 .09	29.23 .02	31.71 +.05	47.42 +.06	4.99 +.12
19 4	42.46 .01	23.67 +.02	22.61 .50	26.47 .35	29.18 .07	31.74 +.02	47.61 .06	5.03 .05
29 4	42.52 .01	23.68 .01	22.03 .64	25.90 .61	29.09 .10	31.76 .00	47.97 .04	4.89 .12
June 8 3	42.56 .07	23.66 .01	21.33 .76	25.24 .87	28.98 .13	31.74 .01	47.53 .04	4.60 .17
18 3	42.60 .04	23.61 .01	20.52 .85	24.26 1.07	28.83 .17	31.70 .05	47.26 .01	4.15 .31
28 3	42.60 .11	23.55 .07	19.63 .91	23.10 1.25	28.64 .10	31.64 .07	47.13 +.07	3.55 .46
July 8 3	42.56 .18	23.47 .00	18.66 .96	21.70 1.41	28.45 .06	31.56 .07	50.12 1.04	2.76 .74
18 3	42.50 .11	23.40 .07	17.67 1.07	20.23 1.54	28.23 .02	31.45 .11	51.23 1.13	2.10 .59
28 3	42.41 .15	23.25 .11	16.66 .90	18.69 1.64	28.00 .02	31.34 .11	52.37 +1.16	1.23 .59

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Piscis Australis. (Fomalhaut.)		α Pegasi. (Markab.)		α Cephei.		θ Piscium.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 22 51	° ' " -30 10	h m 22 59	° ' " +14 38	h m 23 14	° ' " +67 32	h m 23 22	° ' " + 5 48
Jan. 1.2	54.28 -.09	34.3 +0.3	34.51 -.09	48.2 -1.1	19.14 -.44	51.5 -1.0	41.47 -.09	29.2 -0.8
11.1	54.20 .07	33.8 0.6	34.43 .07	47.1 1.1	18.71 .41	50.2 1.5	41.38 .06	28.5 0.8
21.1	54.14 .04	33.1 0.9	34.36 .05	46.0 1.2	18.33 .56	48.4 2.0	41.31 .08	27.7 0.8
31.1	54.11 -.01	32.1 1.1	34.32 .05	44.7 1.2	18.00 .89	46.2 2.4	41.26 .04	26.9 0.7
Feb. 10.1	54.10 +0.02	30.8 1.3	34.31 -.01	43.5 1.2	17.75 .20	43.6 2.7	41.23 -.02	26.2 0.6
20.1	54.13 +0.05	29.3 +1.6	34.32 +0.02	42.4 -1.1	17.59 -.11	40.7 -2.9	41.22 +0.01	25.6 -0.5
Mar. 1.0	54.20 .08	27.6 1.8	34.36 .06	41.4 0.9	17.52 -.01	37.8 3.0	41.25 .04	25.1 0.3
11.0	54.30 .12	25.7 2.0	34.44 .09	40.6 0.7	17.56 +0.09	34.8 2.9	41.30 .07	24.9 -0.1
21.0	54.43 .16	23.6 2.1	34.55 .13	40.1 0.4	17.71 .20	32.0 2.7	41.39 .11	24.8 +0.1
30.9	54.61 .19	21.4 2.2	34.71 .17	39.9 -0.1	17.96 .30	29.4 2.4	41.52 .15	25.1 0.4
Apr. 9.9	54.82 +.23	19.1 +2.3	34.90 +.21	39.9 +0.2	18.30 +.39	27.2 -2.0	41.69 +.19	25.6 +0.7
19.9	55.07 .27	16.8 2.3	35.12 .24	40.4 0.6	18.74 .48	25.4 1.6	41.89 .22	26.5 1.0
29.8	55.35 .30	14.5 2.3	35.38 .27	41.2 0.9	19.25 .55	24.0 1.1	42.13 .25	27.6 1.3
May 9.8	55.66 .32	12.2 2.2	35.67 .30	42.3 1.3	19.83 .60	23.2 -0.5	42.39 .28	29.0 1.5
19.8	56.00 .34	9.9 2.1	35.97 .31	43.8 1.6	20.45 .63	23.0 +0.1	42.69 .30	30.6 1.7
29.8	56.35 +.36	7.9 +2.0	36.30 +.32	45.5 +1.8	21.10 +.65	23.4 +0.7	43.00 +.32	32.5 +1.9
June 8.7	56.71 .36	6.0 1.8	36.62 .33	47.5 2.0	21.76 .65	24.4 1.2	43.32 .32	34.5 2.1
18.7	57.07 .36	4.4 1.5	36.95 .32	49.7 2.2	22.41 .63	25.9 1.7	43.64 .32	36.6 2.1
28.7	57.41 .34	3.1 1.2	37.27 .31	51.9 2.3	23.02 .60	27.9 2.2	43.96 .31	38.7 2.2
July 8.6	57.74 .32	2.0 0.9	37.56 .29	54.3 2.4	23.60 .55	30.4 2.6	44.26 .29	40.9 2.1
18.6	58.05 +.29	1.4 +0.5	37.84 +.26	56.7 +2.3	24.12 +.49	33.2 +3.0	44.55 +.27	43.0 +2.0
28.6	58.32 .25	1.0 +0.2	38.08 .23	59.0 2.3	24.58 .41	36.4 3.3	44.80 .24	45.0 1.9
Aug. 7.6	58.54 .21	1.0 -0.2	38.28 .19	61.3 2.2	24.95 .33	39.8 3.5	45.02 .20	46.9 1.7
17.5	58.73 .16	1.3 0.5	38.45 .16	63.4 2.0	25.25 .25	43.4 3.6	45.21 .17	48.5 1.6
27.5	58.86 .12	2.0 0.8	38.57 .12	65.3 1.8	25.45 .16	47.1 3.7	45.36 .13	50.0 1.4
Sept. 6.5	58.95 +.07	2.9 -1.0	38.65 +.06	67.1 +1.6	25.57 +.07	50.9 +3.7	45.46 +.09	51.3 +1.1
16.5	58.98 +0.02	4.0 1.2	38.69 +0.02	68.6 1.4	25.60 -.01	54.6 3.6	45.53 .05	52.3 0.9
26.4	58.97 -.02	5.2 1.3	38.69 -.01	69.8 1.2	25.54 .10	58.2 3.5	45.55 +0.01	53.0 0.7
Oct. 6.4	58.93 .06	6.6 1.3	38.66 .04	70.9 0.9	25.40 .17	61.6 3.3	45.55 -.02	53.6 0.5
16.4	58.84 .09	7.9 1.3	38.60 .07	71.7 0.7	25.19 .25	64.7 3.0	45.51 .05	54.0 +0.2
26.3	58.73 -.11	9.2 -1.2	38.52 -.09	72.2 +0.4	24.91 -.31	67.5 +2.6	45.45 -.07	54.1 0.0
Nov. 5.3	58.60 .13	10.4 1.1	38.42 .10	72.5 +0.2	24.57 .37	69.9 2.2	45.38 .09	54.0 0.1
15.3	58.46 .14	11.4 0.9	38.31 .11	72.5 -0.1	24.18 .41	71.8 1.7	45.28 .10	53.8 0.3
25.3	58.32 .14	12.2 0.7	38.20 .11	72.3 0.3	23.75 .44	73.1 1.1	45.18 .10	53.4 0.4
Dec. 5.2	58.18 .13	12.8 0.4	38.08 .11	71.8 0.5	23.29 .46	74.0 +0.5	45.08 .11	52.9 0.6
15.2	58.04 -.12	13.1 -0.1	37.97 -.11	71.2 -0.7	22.83 -.47	74.3 -0.1	44.97 -.10	52.3 -0.7
25.2	57.93 .11	13.1 +0.1	37.87 .10	70.4 0.9	22.36 .46	73.9 0.6	44.87 .10	51.6 0.7
35.2	57.83 .09	12.9 +0.4	37.77 -.09	69.4 -1.1	21.91 -.43	73.0 -1.2	44.78 .09	50.8 0.8

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Orionis.	χ Aurigæ.	Groombr. 944.	κ Orionis.	ν Aurigæ.	δ Doradus.	β Aurigæ.	θ Aurigæ.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	96 57 h m 5 12	57 53 h m 5 25	4 51 h m 5 28	99 42 h m 5 42	50 53 h m 5 44	155 46 h m 5 44	45 4 h m 5 51	52 48 h m 5 52
Jan. 0.5	35.08 +.03	59.64 +.06	57.51-.14	51.16 +.05	19.13 +.09	38.70 -.13	56.52 +.10	40.06 +.10
10.4	35.09 -.01	59.68 +.02	57.09 .66	51.20 +.01	19.18 +.03	38.51 .23	56.58 +.03	40.12 +.04
20.4	35.05 .06	59.67 -.03	56.19 1.13	51.18 -.04	19.18 -.03	38.23 .32	56.58 -.03	40.13 -.02
30.4	34.97 .10	59.60 .08	54.83 1.56	51.12 .08	19.11 .08	37.86 .40	56.51 .09	40.07 .07
Feb. 9.3	34.85 .13	59.50 .23	53.08 1.91	51.01 .13	19.01 .13	37.43 .47	56.41 .14	39.99 .11
19.3	34.70 -.15	59.34 -.16	51.02-.2.16	50.88 -.13	18.85 -.17	36.92 -.52	56.23 -.19	39.85 -.16
29.3	34.54 .16	59.17 .18	48.76 2.31	50.72 .16	18.67 .19	36.39 .55	56.03 .21	39.66 .19
Mar. 10.3	34.37 .17	58.98 .19	46.40 2.37	50.54 .17	18.46 .20	35.82 .57	55.81 .23	39.47 .20
20.3	34.20 -.17	58.78 -.19	44.03-2.34	50.37 -.17	18.25 -.21	35.25 -.56	55.57 -.24	39.27 -.21
Oct. 25.6	37.28 +.23	62.57 +.31	69.14+2.60	53.12 +.27	22.07 +.36	37.56 +.46	59.55 +.39	42.91 +.35
Nov. 4.6	37.52 .22	62.87 .29	71.61 2.30	53.38 .24	22.42 .33	38.00 .40	59.93 .37	43.25 .33
14.6	37.74 .20	63.14 .26	73.73 1.97	53.61 .22	22.74 .30	38.35 .31	60.28 .34	43.57 .30
24.5	37.93 .17	63.39 .23	75.54 1.59	53.82 .20	23.02 .27	38.62 .23	60.60 .30	43.85 .27
Dec. 4.5	38.07 .13	63.61 .19	76.90 1.13	54.00 .16	23.27 .22	38.80 .13	60.87 .25	44.11 .23
14.5	38.18 +.09	63.77 +.14	77.79+.64	54.15 +.12	23.46 +.17	38.88 +.05	61.11 +.20	44.32 +.18
24.5	38.25 .06	63.89 .10	78.18+.14	54.24 .08	23.61 .13	38.86 -.05	61.27 .15	44.47 .13
34.4	38.28 +.01	63.96 +.04	78.08-.33	54.29 +.05	23.70 +.06	38.74 -.17	61.37 +.07	44.58 +.07
Mean Solar Date.	η Geminor.	ψ Aurigæ.	ν Geminor.	χ Draconis, S. P.	ϵ Geminor.	ϕ Aurigæ.	θ Geminor.	ζ Mensæ.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	67 28 h m 6 8	40 40 h m 6 16	69 43 h m 6 22	342 41 h m 6 22	64 46 h m 6 37	46 19 h m 6 39	55 55 h m 6 45	170 42 h m 6 48
Jan. 0.5	38.03 +.10	56.16 +.14	49.26+.11	50.96 +.03	34.09 +.14	17.14 +.16	58.40 +.16	49.13-.16
10.5	38.10 +.05	56.26 +.06	49.34 .06	51.06 .16	34.20 .09	17.27 .10	58.53 .10	48.82 .43
20.4	38.13 .00	56.29 -.01	49.38+.02	51.28 .30	34.25 +.03	17.32 +.03	58.60 +.04	48.27 .67
30.4	38.10 -.05	56.24 .07	49.37-.03	51.67 .44	34.26 -.02	17.32 -.03	58.61 -.02	47.48 .90
Feb. 9.4	38.02 .09	56.15 .13	49.31 .08	52.16 .53	34.20 .07	17.25 .09	58.56 .07	46.48 1.09
19.4	37.92 -.12	55.99 -.18	49.21-.11	52.73 +.62	34.11 -.11	17.13 -.15	58.47 -.12	45.30-1.25
29.3	37.78 .15	55.78 .22	49.08 .15	53.41 .71	33.99 .14	16.96 .18	58.33 .16	43.98 1.38
Mar. 10.3	37.61 .17	55.54 .25	48.91 .17	54.15 .75	33.82 .17	16.77 .20	58.15 .18	42.54 1.48
20.3	37.43 .18	55.28 .26	48.74 .17	54.90 .76	33.65 .18	16.56 .22	57.96 .19	41.03 1.53
30.2	37.26 .17	55.01 .26	48.57 .16	55.67 .77	33.47 .18	16.32 .23	57.78 .19	39.49 1.54
Apr. 9.2	37.09 -.15	54.76 -.24	48.41-.15	56.43 +.76	33.30 -.17	16.09 -.23	57.57 -.19	37.95-1.52
Nov. 14.6	41.07 +.28	59.94 +.38	52.17+.28	51.13 -.57	37.05 +.30	20.56 +.37	61.54 +.34	41.94+.96
24.6	41.34 .25	60.31 .35	52.45 .26	50.62 .45	37.34 .28	20.92 .34	61.87 .31	42.79 .74
Dec. 4.6	41.58 .22	60.63 .30	52.70 .23	50.23 .33	37.61 .25	21.24 .30	62.16 .28	43.42 .52
14.5	41.77 +.17	60.90 +.24	52.91+.19	49.95 -.21	37.84 +.21	21.52 +.25	62.42 +.24	43.82+.27
24.5	41.92 .13	61.11 .18	53.08 .14	49.81 -.06	38.02 .17	21.75 .20	62.64 .19	43.95 .00
34.5	42.03 +.09	61.26 +.11	53.19+.10	49.84 +.08	38.17 +.12	21.92 +.14	62.79 +.13	43.81-.25

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
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Mean Solar Date.	ζ Geminor.	63 Aurigæ.	25 Camelop.	γ ⁴ Volantis.	β Can. Min.	26 Lyncis.	Groombr. 1374.	ω ¹ Cancr.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	69 17 h m 6 57	50 31 h m 7 4	7 23 h m 7 9	160 20 h m 7 9	81 30 h m 7 21	42 10 h m 7 47	15 48 h m 7 47	64 19 h m 7 54
Jan. 0.5	58.51 +.16	32.65 +.19	25.86+ .70	41.11 +.04	32.56 +.17	11.25 +.26	51.33 +.49	40.45 +.22
10.5	58.64 .10	32.80 .13	26.38+ .34	41.09 -.08	32.70 .12	11.48 .19	51.77 .33	40.63 .17
20.5	58.71 +.05	32.89 +.07	26.53- .01	40.95 .20	32.79 .07	11.63 .12	52.00 +.16	40.78 .11
30.4	58.73 .00	32.92 .00	26.36 .35	40.70 .31	32.83 +.02	11.72 +.06	52.10 .00	40.85 +.05
Feb. 9.4	58.71 -.05	32.88 -.06	25.83 .68	40.32 .42	32.82 -.03	11.73 -.02	52.01 -.17	40.88 .00
19.4	58.63 -.10	32.80 -.11	25.00- .96	39.85 -.51	32.75 -.07	11.67 -.09	51.77 -.31	40.84 -.05
29.4	58.51 .13	32.66 .16	23.91 1.00	39.29 .59	32.66 .10	11.56 .15	51.39 .44	40.77 .09
Mar. 10.3	58.38 .15	32.48 .19	22.61 1.37	38.67 .65	32.54 .13	11.38 .19	50.89 .55	40.66 .14
20.3	58.21 .16	32.29 .20	21.17 1.47	38.00 .68	32.40 .15	11.18 .21	50.30 .63	40.51 .16
30.3	58.04 .17	32.08 .21	19.68 1.52	37.31 .69	32.22 .16	10.95 .23	49.64 .68	40.35 .16
Apr. 9.2	57.87 -.16	31.87 -.20	18.14-1.51	36.62 -.68	32.06 -.16	10.70 -.24	48.95 -.69	40.18 -.16
19.2	57.72 -.16	31.68 -.18	16.66-1.43	35.95 -.65	31.92 -.14	10.46 -.23	48.27 -.68	40.03 -.15
Nov. 24.6	61.58 +.29	36.16 +.35	35.39+1.62	39.67 +.47	35.28 +.29	14.73 +.44	56.51 +.91	43.37 +.34
Dec. 4.6	61.86 .26	36.49 .31	36.94 1.44	40.09 .37	35.55 .26	15.15 .39	57.38 .83	43.70 .31
14.6	62.10 +.22	36.78 +.27	38.27+1.18	40.41 +.26	35.80 +.23	15.51 +.35	58.16 +.72	43.99 +.28
24.5	62.29 .18	37.02 .23	39.29 .86	40.61 +.13	36.02 .19	15.83 .31	58.81 .59	44.25 .25
34.5	62.45 +.14	37.21 +.16	39.99+ .56	40.67 .00	36.18 +.15	16.10 +.24	59.33 +.44	44.48 +.20
Mean Solar Date.	ζ ¹ Cancr.	β Cancr.	30 Monoce- rotis.	θ Chamæ- leontis.	σ Hydræ.	γ Cancr.	σ ² Cancr. (mean.)	θ Hydræ.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	72 2 h m 8 6	80 30 h m 8 10	93 34 h m 8 20	167 9 h m 8 23	86 18 h m 8 33	68 9 h m 8 37	59 2 h m 8 47	87 15 h m 9 8
Jan. 0.6	16.78 +.22	54.32 +.21	29.47 +.21	49.20+ .35	21.13 +.23	18.02 +.25	56.10 +.28	58.81 +.25
10.5	16.96 .16	54.50 .17	29.65 .16	49.44+ .16	21.32 .18	18.25 .20	56.35 .23	59.05 .21
20.5	17.11 .12	54.65 .12	29.79 .11	49.51- .03	21.49 .13	18.42 .15	56.55 .17	59.24 .16
30.5	17.20 .07	54.73 .06	29.88 .06	49.38 .21	21.60 .09	18.55 .10	56.69 .11	59.37 .11
Feb. 9.5	17.24 +.02	54.77 +.01	29.91 +.01	49.08 .38	21.65 +.04	18.61 +.05	56.77 +.06	59.46 .07
19.4	17.23 -.03	54.76 -.04	29.90 -.03	48.62- .54	21.66 -.02	18.62 .00	56.81 .00	59.50 +.02
29.4	17.16 .08	54.70 .08	29.84 .07	48.00 .69	21.61 .06	18.59 -.05	56.77 -.05	59.49 -.03
Mar. 10.4	17.06 .12	54.60 .11	29.75 .10	47.25 .80	21.53 .09	18.52 .09	56.70 .09	59.44 .07
20.4	16.94 .14	54.48 .13	29.64 .12	46.40 .89	21.43 .12	18.40 .12	56.59 .13	59.35 .09
30.3	16.78 .15	54.34 .14	29.50 .14	45.47 .96	21.30 .14	18.27 .14	56.45 .15	59.25 .11
Apr. 9.3	16.63 -.16	54.20 -.14	29.35 -.15	44.49- .99	21.16 -.15	18.11 -.15	56.29 -.16	59.13 -.12
19.3	16.48 .15	54.05 .15	29.20 .15	43.49 1.01	21.02 .14	17.96 .15	56.12 .17	59.00 .13
29.2	16.34 .13	53.90 .14	29.05 .14	42.47 1.02	20.88 .13	17.82 .14	55.95 .15	58.86 .13
May 9.2	16.21 -.12	53.77 -.12	28.92 -.14	41.47-0.99	20.74 -.11	17.68 -.13	55.81 -.13	58.73 -.12

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FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Argus.	α Lyncis.	ι Leonis Minoris.	σ Leonis.	ζ Chamæ- leontis.	ρ Leonis Minoris.	π Leonis.	λ Ursæ Ma- joris.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	159 17 9 12	55 10 9 14	53 8 9 27	79 38 9 35	170 28 9 36	48 27 9 51	81 27 9 54	46 34 10 10
Jan. 0.6	5.55 +.40	45.26 +.31	53.33 +.33	37.55 +.28	59.99+ .85	21.11 +.36	44.50 +.28	51.60 +.38
10.6	5.88 .28	45.54 .27	53.62 .28	37.81 .24	60.72 .63	21.45 .32	44.77 .26	51.97 .35
20.6	6.11 .17	45.78 .21	53.89 .23	38.03 .20	61.25 .40	21.74 .27	45.01 .21	52.29 .30
30.6	6.23 +.06	45.96 .15	54.08 .17	38.20 .15	61.52+ .16	21.98 .21	45.18 .16	52.54 .24
Feb. 9.5	6.23 -.07	46.08 .09	54.22 .11	38.33 .10	61.57- .07	22.13 .14	45.33 .12	52.74 .17
19.5	6.09 -.18	46.12 +.03	54.29 +.05	38.39 +.05	61.37- .30	22.24 +.08	45.41 +.07	52.87 +.10
29.5	5.87 .27	46.13 -.02	54.30 .00	38.42 .00	60.97 .51	22.28 +.02	45.46 +.02	52.94 +.05
Mar. 10.4	5.54 .37	46.07 .07	54.26 -.05	38.39 -.04	60.36 .70	22.27 -.03	45.46 -.02	52.94 -.01
20.4	5.13 .44	45.98 .12	54.17 .11	38.32 .07	59.58 .86	22.19 .08	45.40 .06	52.88 .07
30.4	4.67 .49	45.85 .15	54.05 .15	38.24 .10	58.64 1.01	22.08 .13	45.33 .08	52.78 .12
Apr. 9.3	4.15 -.53	45.69 -.16	53.90 -.16	38.13 -.12	57.57-1.12	21.93 -.16	45.24 -.10	52.65 -.15
19.3	3.61 .55	45.52 .17	53.73 .17	38.01 .13	56.41 1.20	21.76 .17	45.12 .11	52.48 .17
29.3	3.05 .57	45.35 .17	53.55 .17	37.88 .13	55.17 1.25	21.58 .18	45.00 .12	52.29 .18
May 9.3	2.47 .57	45.18 .16	53.39 .16	37.75 .12	53.92 1.27	21.40 .18	44.88 .12	52.10 .19
19.2	1.91 -.55	45.03 -.15	53.23 -.15	37.63 -.11	52.63-1.27	21.21 -.17	44.76 -.11	51.92 -.18
Mean Solar Date.	μ Hydræ.	β Leonis Minoris.	α Antilæ.	β Octantis, S. P.	δ Leonis Minoris.	δ^a Chamæ- leontis.	δ^b Leonis Minoris.	Groombr. 1706.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	106 18 10 21	52 46 10 21	120 32 10 22	188 4 10 35	66 16 10 37	170 0 10 44	55 13 10 47	11 40 10 51
Jan. 20.6	5.29 +.23	54.71 +.28	25.07 +.23	22.88- .67	47.75 +.27	51.60+ .78	32.06 +.30	46.42 +.93
30.6	5.49 .18	54.97 .23	25.28 .18	22.33 .43	47.99 .22	52.27 .57	32.33 .25	47.27 .76
Feb. 9.6	5.65 .13	55.16 .17	25.43 .13	22.03- .17	48.18 .17	52.74 .37	32.55 .19	47.94 .57
19.5	5.76 .08	55.30 .11	25.54 .08	21.99+ .06	48.32 .12	53.00+ .16	32.71 .14	48.40 .36
29.5	5.81 +.04	55.38 +.06	25.58 +.03	22.16 .89	48.42 .07	53.06- .04	32.82 .08	48.66 +.15
Mar. 10.5	5.82 .00	55.40 .00	25.58 -.01	22.57+ .53	48.45 +.02	52.91- .25	32.86 +.03	48.70 -.06
20.4	5.80 -.04	55.38 -.05	25.55 .05	23.23 .76	48.44 -.02	52.57 .43	32.87 -.02	48.53 .27
30.4	5.73 .07	55.30 .09	25.47 .09	24.09 .96	48.39 .05	52.06 .59	32.81 .07	48.17 .45
Apr. 9.4	5.65 .09	55.18 .12	25.37 .12	25.15 1.15	48.32 .08	51.39 .73	32.73 .09	47.63 .61
19.4	5.55 .10	55.05 .14	25.25 .14	26.39 1.31	48.23 .10	50.61 .86	32.63 .12	46.96 .73
29.3	5.44 -.11	54.88 -.15	25.11 -.15	27.77+1.45	48.12 -.12	49.68- .97	32.50 -.14	46.17 -.83
May 9.3	5.32 .12	54.72 .16	24.96 .15	29.28 1.55	47.99 .13	48.66 1.04	32.35 .14	45.30 .89
19.3	5.20 .13	54.56 .15	24.82 .14	30.87 1.63	47.87 .12	47.60 1.09	32.21 .14	44.39 .92
29.3	5.08 .12	54.41 .14	24.67 .14	32.53 1.66	47.75 .11	46.48 1.12	32.06 .14	43.47 .91
June 8.2	4.96 -.10	54.27 -.13	24.54 -.13	34.19+1.63	47.63 -.10	45.34-1.15	31.92 -.13	42.57 -.88

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Octantis.	ρ^2 Leonis.	ψ Urs. Maj.	ν Urs. Maj.	ξ Hydræ.	χ Urs. Maj.	π Virginis.	ϵ Corvi.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	174 2 h m 10 59	87 29 h m 11 1	44 56 h m 11 3	56 20 h m 11 12	121 17 h m 11 27	41 39 h m 11 40	82 48 h m 11 55	112 2 h m 12 4
Feb. 9.6	69.45+ .73	37.87 +.18	52.15 +.25	54.53 +.22	54.91 +.21	36.71 +.20	34.51 +.23	48.20 +.24
19.6	70.00 .37	38.02 .13	52.36 .17	54.73 .16	55.09 .16	36.97 .23	34.72 .18	48.42 .19
29.5	70.19+ .04	38.14 .09	52.50 .10	54.86 .10	55.23 .11	37.16 .16	34.88 .14	48.59 .15
Mar. 10.5	70.09- .28	38.19 +.04	52.56 +.04	54.93 .05	55.31 .06	37.28 .09	35.00 .09	48.72 .11
20.5	69.64 .60	38.21 .00	52.58 -.01	54.96 +.01	55.35 +.02	37.34 +.03	35.06 .05	48.81 .07
30.4	68.90- .88	38.19 -.03	52.53 -.07	54.95 -.03	55.36 -.01	37.34 -.03	35.11 +.03	48.85 +.03
Apr. 9.4	67.89 1.13	38.15 .06	52.44 .10	54.89 .06	55.33 .04	37.28 .08	35.12 .00	48.87 .00
19.4	66.65 1.37	38.08 .08	52.33 .13	54.80 .09	55.26 .07	37.18 .12	35.10 -.03	48.86 -.02
29.4	65.16 1.57	38.00 .09	52.17 .17	54.69 .11	55.18 .09	37.05 .15	35.05 .06	48.82 .05
May 9.3	63.52 1.72	37.90 .10	51.99 .18	54.57 .13	55.08 .11	36.88 .17	34.98 .07	48.76 .07
19.3	61.73-1.84	37.80 -.10	51.80 -.19	54.43 -.14	54.96 -.12	36.69 -.19	34.91 -.08	48.68 -.08
29.3	59.84 1.91	37.70 .10	51.61 .19	54.29 .15	54.84 .13	36.50 .20	34.83 .09	48.60 .09
June 8.3	57.92 1.91	37.60 .09	51.42 .18	54.14 .14	54.69 .14	36.29 .20	34.73 .10	48.50 .10
18.2	56.01-1.86	37.51 -.09	51.25 -.17	54.00 -.13	54.56 -.13	36.09 -.19	34.63 -.09	48.40 -.10
Mean Solar Date.	α Can. Ven.	δ Urs. Min.	δ^2 Corvi.	β Can. Ven.	γ Virginis, (mean.)	β Comæ Berenices.	γ Cassiop., S. P.	α Cephei, S. P.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	48 46 h m 12 10	1 43 h m 12 14	105 56 h m 12 24	48 5 h m 12 28	90 53 h m 12 36	61 54 h m 12 46	330 9 h m 12 50	355 42 h m 12 54
Feb. 9.6	57.53 +.30	71.18+5.42	30.75 +.25	50.74 +.31	25.13 +.26	40.11 +.29	24.30 -.29	16.70-2.31
19.6	57.80 .24	76.08 4.30	30.98 .21	51.02 .26	25.37 .22	40.37 .24	24.04 .22	14.59 1.91
29.6	58.01 .18	79.77 3.04	31.17 .16	51.26 .21	25.56 .17	40.59 .20	23.86 .15	12.89 1.48
Mar. 10.5	58.16 .12	82.18 1.69	31.31 .12	51.43 .15	25.71 .13	40.77 .16	23.74 .08	11.63 1.00
20.5	58.26 .06	83.15+ .27	31.42 .09	51.55 .10	25.82 .10	40.91 .11	23.69 -.02	10.89- .47
30.5	58.31 +.03	82.73-1.10	31.48 +.06	51.62 +.05	25.91 +.07	40.99 +.06	23.70 +.06	10.69+ .09
Apr. 9.5	58.31 -.01	80.95 2.43	31.52 +.03	51.63 .00	25.95 +.03	41.04 +.03	23.82 .16	11.07 .62
19.4	58.26 .05	77.88 3.64	31.53 .00	51.61 -.04	25.97 .00	41.05 -.01	24.02 .24	11.93 1.13
29.4	58.18 .09	73.66 4.71	31.52 -.03	51.53 .07	25.96 -.02	41.03 .04	24.29 .32	13.33 1.61
May 9.4	58.07 .12	68.47 5.60	31.46 .05	51.44 .10	25.92 .04	40.97 .06	24.66 .39	15.15 2.02
19.4	57.94 -.14	62.48-6.29	31.40 -.07	51.32 -.13	25.87 -.05	40.91 -.08	25.07 +.43	17.37+2.37
29.3	57.79 .16	55.89 6.77	31.33 .08	51.17 .15	25.81 .06	40.82 .10	25.52 .48	19.90 2.65
June 8.3	57.62 .17	48.94 7.05	31.25 .09	51.01 .16	25.74 .08	40.71 .11	26.03 .54	22.66 2.84
18.3	57.45 -.16	41.79-7.14	31.16 -.09	50.83 -.17	25.65 -.08	40.60 -.11	26.59 +.56	25.58+2.96

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Muscæ.	ϵ Virginis.	$z\alpha$ Can. Ven.	κ Octantis.	B.A.C. 4536.	m Virginis.	θ Apodis.	π Hydræ.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	160 59 12 55	78 29 12 57	48 53 13 12	175 15 13 24	52 17 13 30	98 11 13 36	166 18 13 55	116 11 14 0
Feb. 29.6	11.06 +.45	2.21 +.20	55.47 +.25	16.34 +1.90	11.64 +.25	11.07 +.23	15.28 +.83	28.62 +.24
Mar. 10.6	11.46 .35	2.38 .16	55.70 .20	18.06 1.54	11.88 .21	11.28 .19	16.05 .71	28.86 .23
20.6	11.76 .25	2.52 .12	55.87 .15	19.41 1.17	12.07 .16	11.45 .16	16.70 .59	29.09 .20
30.5	11.97 .16	2.62 .08	55.99 .10	20.40 .79	12.20 .12	11.60 .13	17.23 .47	29.27 .17
Apr. 9.5	12.07 +.06	2.68 .05	56.06 .06	20.99 .40	12.30 .08	11.72 .10	17.63 .33	29.41 .13
19.5	12.09 -.03	2.71 +.02	56.09 +.01	21.21 +.02	12.34 +.03	11.80 +.07	17.89 +.19	29.53 +.10
29.4	12.01 .13	2.71 -.01	56.08 -.03	21.03 -.37	12.36 .00	11.84 .04	18.02 +.06	29.61 .07
May 9.4	11.84 .21	2.70 .03	56.02 .06	20.47 .74	12.33 -.04	11.87 +.01	18.01 -.07	29.66 .04
19.4	11.59 .28	2.66 .05	55.93 .09	19.55 1.09	12.27 .07	11.87 -.01	17.89 .19	29.69 +.01
29.4	11.29 .35	2.59 .07	55.83 .12	18.30 1.40	12.18 .10	11.85 .03	17.63 .31	29.69 -.01
June 8.3	10.90 -.41	2.51 -.08	55.69 -.14	16.76 -1.68	12.07 -.12	11.81 -.05	17.27 -.43	29.67 -.04
18.3	10.47 .45	2.43 .09	55.54 .16	14.94 1.92	11.94 .14	11.75 .08	16.78 .52	29.60 .07
28.3	9.99 .47	2.33 .10	55.37 .17	12.94 2.10	11.80 .15	11.66 .09	16.23 .60	29.53 .09
July 8.3	9.53 -.45	2.23 -.10	55.19 -.18	10.75 -2.24	11.63 -.16	11.57 -.10	15.59 -.67	29.43 -.10
Mean Solar Date.	δ Bootis.	κ Virginis.	γ Urs. Min.	δ Octantis.	λ Bootis.	λ Virginis.	μ Hydri. S. P.	α Apodis.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	64 25 14 5	99 47 14 7	11 58 14 9	173 11 14 10	43 26 14 12	102 54 14 13	190 26 14 33	168 36 14 35
Mar. 20.6	41.89 +.20	23.07 +.20	22.49 +.59	23.76 +1.23	28.73 +.22	31.10 +.20	48.40 -.82	2.45 +.88
30.6	42.05 .15	23.24 .16	22.98 .39	24.87 .99	28.92 .17	31.28 .17	47.65 .67	3.26 .75
Apr. 9.5	42.18 .11	23.39 .13	23.27 .19	25.74 .75	29.08 .13	31.43 .14	47.06 .50	3.93 .59
19.5	42.27 .08	23.50 .10	23.37 +.01	26.32 .44	29.18 .07	31.56 .11	46.65 .31	4.45 .44
29.5	42.33 .05	23.59 .07	23.30 -.17	26.65 +.18	29.22 +.03	31.65 .08	46.44 -.11	4.80 .28
May 9.5	42.36 +.02	23.63 +.04	23.03 -.35	26.69 -.09	29.23 -.02	31.71 +.05	46.42 +.08	4.99 +.12
19.4	42.36 -.01	23.67 +.02	22.61 .50	26.47 .35	29.18 .07	31.74 +.02	46.61 .28	5.03 -.05
29.4	42.32 .04	23.68 -.01	22.03 .64	25.99 .61	29.09 .10	31.76 .00	46.97 .46	4.89 .21
June 8.4	42.26 .07	23.66 .03	21.33 .76	25.24 .87	28.98 .13	31.74 -.03	47.53 .64	4.60 .37
18.3	42.19 .09	23.61 .05	20.52 .85	24.26 1.07	28.83 .17	31.70 .05	48.26 .80	4.15 .51
28.3	42.10 -.11	23.55 -.07	19.63 -.93	23.10 -1.25	28.64 -.19	31.64 -.07	49.13 +.93	3.58 -.64
July 8.3	41.98 .12	23.47 -.09	18.66 .98	21.76 1.41	28.45 .20	31.56 .09	50.12 1.05	2.88 .74
18.3	41.85 .14	23.36 .10	17.67 1.00	20.29 1.54	28.23 .22	31.45 .11	51.23 1.13	2.10 .83
28.2	41.71 -.15	23.25 -.11	16.66 -.99	18.69 -1.64	28.00 -.22	31.34 -.11	52.37 +1.16	1.23 -.89

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	33 Bootis.	47 Cephei, S. P.	γ Scorpii.	δ Bootis.	ρ Octantis.	β Cor. Bor.	γ Camelop., S. P.	δ Apodis.
	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "
	45 9 h m 14 34	349 0 h m 14 52	114 52 h m 14 58	56 18 h m 15 11	174 7 h m 15 19	60 32 h m 15 23	341 1 h m 15 39	168 26 h m 16 4
Mar. 30.6	60.93 +.22	10.56-.48	1.29 +.23	21.10 +.22	30.35+1.77	34.82 +.23	21.30 -.40	54.72+1.13
Apr. 9.6	61.11 .16	10.19 .27	1.50 .19	21.31 .18	31.98 1.49	35.04 .20	20.98 .24	55.78 .99
19.5	61.23 .10	10.03 -.05	1.67 .16	21.46 .14	33.33 1.21	35.21 .16	20.81 -.11	56.70 .85
29.5	61.30 .06	10.10+ .19	1.83 .13	21.59 .11	34.40 .90	35.35 .12	20.75 +.01	57.49 .78
May 9.5	61.35 +.02	10.37 .37	1.94 .10	21.68 .07	35.13 .57	35.46 .08	20.82 .13	58.13 .57
19.5	61.34 -.03	10.88+ .60	2.03 +.07	21.73 +.03	35.54+ .24	35.53 +.05	21.01 +.26	58.62+ .40
29.4	61.28 .07	11.56 .78	2.08 .04	21.74 .00	35.61-.10	35.57 +.02	21.35 .39	58.92 .22
June 8.4	61.19 .10	12.43 .94	2.10 +.01	21.73 -.03	35.35 .43	35.56 -.02	21.78 .50	59.05+ .05
18.4	61.07 .13	13.43 1.08	2.09 -.02	21.66 .07	34.75 .74	35.53 .05	22.34 .60	59.01 .13
28.3	60.91 .16	14.58 1.19	2.05 .05	21.58 .10	33.87 1.04	35.45 .08	22.97 .68	58.78 .31
July 8.3	60.73 -.19	15.81+1.26	1.98 -.08	21.46 -.13	32.68-1.31	35.36 -.11	23.69 +.75	58.39-.46
18.3	60.52 .21	17.10 1.31	1.89 .10	21.32 .16	31.26 1.54	35.23 .14	24.47 .79	57.86 .60
28.3	60.31 .22	18.43 1.33	1.78 .13	21.15 .17	29.61 1.72	35.07 .16	25.27 .82	57.20 .72
Aug. 7.2	60.07 .23	19.77 1.33	1.64 .15	20.97 .18	27.83 1.80	34.91 .17	26.11 .84	56.42 .82
17.2	59.84 .23	21.09 1.30	1.50 .15	20.77 .19	26.01 1.83	34.72 .18	26.94 .83	55.55 .88
27.2	59.61 -.22	22.36+1.25	1.34 -.16	20.58 -.20	24.17-1.84	34.54 -.19	27.76 +.81	54.65-.91
Mean Solar Date.	ϕ Herculis.	σ Cor. Bor. (mean.)	γ Apodis.	η Urs. Min.	η Ophiuchi.	π Herculis.	θ Ophiuchi.	δ Aræ.
	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "
	44 48 h m 16 5	55 53 h m 16 10	168 40 h m 16 17	14 0 h m 16 20	105 36 h m 17 4	53 4 h m 17 11	114 54 h m 17 15	150 36 h m 17 21
Apr. 9.6	31.79 +.26	49.26 +.25	38.11+1.03	36.67 +.62	26.96 +.28	27.39 +.29	39.59 +.32	46.21 +.57
19.6	32.02 .21	49.48 .21	39.10 .93	37.21 .48	27.24 .26	27.66 .26	39.90 .29	46.73 .51
29.6	32.21 .17	49.67 .17	39.97 .78	37.63 .35	27.49 .24	27.92 .23	40.16 .26	47.22 .46
May 9.6	32.36 .13	49.82 .13	40.66 .62	37.90 .19	27.72 .21	28.13 .20	40.41 .24	47.66 .41
19.5	32.48 .08	49.94 .10	41.22 .46	38.01 +.03	27.92 .19	28.31 .16	40.64 .21	48.04 .36
29.5	32.52 +.03	50.01 +.06	41.59+ .29	37.97 -.12	28.09 +.16	28.45 +.12	40.84 +.18	48.37 +.29
June 8.5	32.54 -.01	50.04 +.02	41.80+ .11	37.78 .27	28.23 .12	28.55 .08	40.99 .14	48.62 .22
18.4	32.49 .06	50.05 -.02	41.80-.08	37.44 .41	28.33 .08	28.60 +.04	41.12 .11	48.80 .15
28.4	32.41 .11	50.00 .06	41.63 .25	36.96 .54	28.39 .04	28.62 -.01	41.19 .07	48.91 +.08
July 8.4	32.28 .15	49.92 .10	41.29 .42	36.36 .66	28.41 +.01	28.58 .05	41.24 +.05	48.94 .00
18.4	32.10 -.18	49.81 -.13	40.79-.58	35.64 -.76	28.41 -.03	28.50 -.09	41.24 -.02	48.90 -.08
28.3	31.91 .21	49.65 .16	40.14 .71	34.84 .84	28.35 .07	28.38 .14	41.19 .06	48.77 .16
Aug. 7.3	31.68 .24	49.48 .18	39.38 .82	33.96 .90	28.27 .10	28.21 .17	41.11 .10	48.59 .22
17.3	31.43 .26	49.28 .20	38.50 .90	33.04 .95	28.16 .13	28.02 .20	40.99 .13	48.33 .28
27.3	31.15 .27	49.07 .21	37.57 .94	32.07 .97	28.02 .15	27.81 .22	40.84 .15	48.03 .32
Sept. 6.2	30.89 -.26	48.85 -.22	36.62-.94	31.10 -.96	27.86 -.16	27.57 -.23	40.68 -.17	47.68 -.34
16.2	30.62 .26	48.64 .22	35.70 .90	30.14 .92	27.69 .15	27.34 .24	40.50 .18	47.34 .35
26.2	30.36 .24	48.42 .23	34.83 .82	29.26 .86	27.53 .14	27.09 .23	40.32 .17	46.99 .34
Oct. 6.1	30.14 -.20	48.18 -.24	34.06-.74	28.43 -.78	27.39 -.14	26.87 -.22	40.16 -.15	46.66 -.32

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombr. 944, S. P.	ϵ Herculis.	θ Herculis.	σ Herculis.	λ Sagittarii.	χ Draconis.	ζ Pavonis.	γ Lyrae.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	355 9 17 28	43 56 17 36	52 44 17 52	61 15 18 3	115 29 18 21	17 19 18 22	161 31 18 30	57 27 18 55
May 19.6	34.80-.36	34.63+.19	43.77+.20	31.73+.21	36.38+.26	58.83+.42	60.25+.66	5.52+.26
29.6	34.65+.07	34.79 .15	43.95 .16	31.92 .18	36.63 .24	59.19 .30	60.87 .58	5.76 .23
June 8.5	34.95 .54	34.92 .10	44.09 .12	32.08 .14	36.86 .21	59.43 .18	61.41 .48	5.98 .19
18.5	35.73 .99	34.98+.04	44.19 .08	32.20 .10	37.05 .17	59.55+.05	61.83 .37	6.15 .14
28.5	36.93 1.41	35.00-.01	44.24+.03	32.27 .06	37.19 .13	59.52-.09	62.15 .25	6.27 .10
July 8.5	38.55+1.80	34.96-.06	44.25-.02	32.31+.02	37.30+.09	59.38-.20	62.33+.12	6.35+.06
18.4	40.53 2.13	34.87 .12	44.20-.06	32.31-.03	37.35+.04	59.12 .32	62.39 .00	6.40+.01
28.4	42.80 2.43	34.73 .17	44.12 .11	32.24 .07	37.36-.01	58.75 .43	62.33-.12	6.38-.04
Aug. 7.4	45.39 2.69	34.54 .20	43.99 .15	32.15 .12	37.32 .05	58.25 .33	62.14 .24	6.32 .09
17.3	48.18 2.86	34.32 .23	43.81 .18	32.02 .15	37.25 .09	57.69 .62	61.85 .35	6.21 .13
27.3	51.11+3.00	34.07-.26	43.62-.21	31.84-.17	37.14-.13	57.02-.69	61.44-.45	6.07-.17
Sept. 6.3	54.18 3.10	33.78 .28	43.39 .23	31.66 .19	36.98 .16	56.31 .75	60.96 .52	5.88 .20
16.3	57.31 3.12	33.49 .29	43.15 .24	31.45 .21	36.82 .17	55.52 .79	60.41 .56	5.68 .21
26.2	60.42 3.08	33.19 .29	42.90 .25	31.24 .21	36.64 .18	54.73 .79	59.84 .58	5.47 .22
Oct. 6.2	63.46 3.00	32.91 .27	42.66 .24	31.02 .21	36.46 .17	53.93 .80	59.25 .58	5.24 .22
16.2	66.41+2.84	32.65-.24	42.42-.23	30.82-.20	36.29-.16	53.14-.79	58.68-.55	5.02-.21
Mean Solar Date.	ϵ Lyrae.	α Camelop. S. P.	θ Lyrae.	β Cygni.	β Sagittæ.	δ Cygni.	Groombr. 1374, S. P.	ϵ Pavonis
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	54 4 19 3	352 37 19 9	52 3 19 12	62 16 19 26	72 46 19 36	45 7 19 41	344 12 19 47	163 11 19 48
May 29.6	37.96+.25	12.33-.61	47.85+.26	34.08+.26	25.19+.25	45.73+.30	46.17-.35	41.37+.79
June 8.6	38.19 .21	11.87 .32	48.09 .21	34.32 .22	25.44 .23	46.00 .25	45.88 .22	42.11 .70
18.6	38.38 .16	11.69-.03	48.28 .16	34.54 .18	25.66 .20	46.24 .20	45.72-.10	42.76 .60
28.5	38.50 .11	11.81+.26	48.42 .12	34.70 .14	25.83 .16	46.42 .15	45.68+.03	43.32 .49
July 8.5	38.59 .07	12.20 .53	48.52 .08	34.81 .10	25.97 .12	46.54 .10	45.79 .17	43.74 .36
18.5	38.62+.02	12.87+.81	48.56+.03	34.89+.06	26.07+.08	46.62+.05	46.02+.29	44.05+.23
28.4	38.62-.03	13.82 1.06	48.56-.02	34.91+.01	26.11+.01	46.62-.01	46.36 .41	44.20+.08
Aug. 7.4	38.55 .08	14.98 1.28	48.50 .08	34.90-.04	26.12-.01	46.58 .07	46.84 .52	44.20 .06
17.4	38.45 .13	16.37 1.49	48.39 .13	34.83 .08	26.08 .06	46.48 .12	47.41 .62	44.09 .19
27.4	38.30 .16	17.95 1.68	48.24 .17	34.72 .12	25.99 .10	46.34 .17	48.08 .72	43.83 .32
Sept. 6.3	38.11-.19	19.72+1.83	48.05-.20	34.57-.16	25.89-.13	46.14-.21	48.86+.81	43.45-.44
16.3	37.91 .22	21.60 1.94	47.84 .23	34.40 .18	25.74 .15	45.92 .24	49.71 .88	42.95 .53
26.3	37.68 .23	23.59 2.02	47.60 .24	34.21 .19	25.58 .16	45.66 .26	50.61 .94	42.39 .60
Oct. 6.3	37.44 .23	25.64 2.07	47.36 .25	34.00 .20	25.41 .17	45.39 .27	51.58 .98	41.76 .63
16.2	37.21 .23	27.74 2.06	47.12 .24	33.80 .20	25.23 .18	45.12 .28	52.58 .99	41.12 .64
26.2	36.98-.21	29.77+2.03	46.89-.23	33.61-.19	25.06-.16	44.85-.27	53.57+1.00	40.48-.63
Nov. 5.2	36.78-.18	31.80+2.00	46.68-.21	33.43-.18	24.91-.14	44.58-.26	54.58+1.00	39.86-.60

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS,
FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Sagittæ.	ϵ Sagittarii.	θ Aquilæ.	β Cygni.	α Delphini.	β Pavonis.	ψ Capricor.	ϵ Cygni.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	70 47 19 54	118 0 19 56	91 8 20 5	43 34 20 10	74 27 20 34	156 35 20 35	115 39 20 39	56 25 20 42
June 18.6	10.83 +.23	19.68 +.27	59.46 +.22	24.02 +.24	51.25 +.24	42.12 +.34	59.90 +.28	2.77 +.27
28.6	11.02 .17	19.93 .23	59.66 .20	24.23 .19	51.48 .21	42.62 .46	60.16 .25	3.02 .23
July 8.5	11.17 .13	20.13 .18	59.84 .16	24.40 .14	51.67 .17	43.04 .38	60.40 .22	3.22 .18
18.5	11.29 .09	20.28 .13	59.98 .12	24.51 .08	51.82 .12	43.39 .29	60.60 .17	3.37 .13
28.5	11.35 +.05	20.39 .08	60.08 .07	24.55 +.02	51.93 .08	43.63 .19	60.74 .12	3.48 .08
Aug. 7.5	11.38 .00	20.44 +.03	60.12 +.03	24.55 -.03	51.99 +.05	43.76 +.08	60.84 +.07	3.52 +.03
17.4	11.35 -.04	20.44 -.02	60.13 -.01	24.48 .09	52.02 +.01	43.78 -.02	60.87 +.03	3.53 -.01
27.4	11.28 .08	20.38 .06	60.08 .05	24.37 .15	51.98 -.04	43.71 .12	60.87 -.01	3.47 .06
Sept. 6.4	11.18 .12	20.30 .10	60.01 .09	24.20 .19	51.92 .08	43.53 .23	60.82 .05	3.41 .11
16.4	11.04 .15	20.18 .13	59.91 .12	23.99 .23	51.83 .12	43.25 .31	60.74 .10	3.28 .14
26.3	10.88 -.17	20.02 -.15	59.77 -.14	23.74 -.25	51.70 -.15	42.91 -.37	60.61 -.13	3.12 -.17
Oct. 6.3	10.71 .18	19.85 .17	59.62 .15	23.48 .27	51.54 .16	42.51 .42	60.46 .15	2.94 .19
16.3	10.53 .18	19.67 .18	59.47 .15	23.20 .28	51.38 .16	42.08 .44	60.30 .16	2.74 .20
26.2	10.35 .17	19.50 .16	59.32 .14	22.93 .27	51.22 .15	41.63 .45	60.15 .16	2.55 .20
Nov. 5.2	10.19 .14	19.34 .14	59.18 .13	22.66 .26	51.07 .14	41.18 .44	59.98 .15	2.35 .20
15.2	10.05 -.11	19.21 -.12	59.05 -.11	22.41 -.24	50.93 -.15	40.75 -.40	59.84 -.15	2.16 -.18
25.2	9.95 -.08	19.10 -.11	58.96 -.08	22.18 -.21	50.80 -.12	40.38 -.33	59.71 -.12	1.98 -.16
Mean Solar Date.	τ Cygni.	ζ Capricor.	γ Cygni.	λ^1 Octantis.	ζ Chamæle- ontis, S. P.	π^4 Cygni.	ι Pegasi.	π Pegasi.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
	52 24 21 10	112 52 21 20	50 3 21 32	173 12 21 35	189 32 21 36	41 10 21 42	64 34 21 48	57 20 22 5
July 8.6	41.29 +.21	47.67 +.25	49.63 +.25	16.15 +1.40	47.08-.80	59.78 +.28	22.69 +.25	24.88 +.27
18.6	41.49 .16	47.90 .21	49.85 .19	17.40 1.11	46.36 .64	60.03 .22	22.92 .20	25.13 .22
28.5	41.62 .11	48.08 .16	50.01 .14	18.37 .87	45.81 .43	60.21 .15	23.09 .15	25.33 .17
Aug. 7.5	41.71 .06	48.21 .11	50.14 .09	19.04 .56	45.50-.21	60.34 .09	23.22 .11	25.47 .12
17.5	41.74 +.01	48.30 .06	50.19 +.04	19.38+.17	45.38 .00	60.40 +.04	23.32 .07	25.58 .08
27.5	41.73 -.04	48.33 +.02	50.20 -.01	19.38-.17	45.49+.24	60.41 -.01	23.36 +.02	25.64 +.04
Sept. 6.4	41.66 .08	48.33 -.02	50.15 .06	19.04 .51	45.87 .47	60.37 .06	23.36 -.02	25.65 .00
16.4	41.55 .13	48.27 .06	50.07 .11	18.36 .83	46.43 .67	60.28 .12	23.31 .06	25.62 -.04
26.4	41.40 .17	48.18 .10	49.95 .15	17.38 1.11	47.21 .88	60.12 .17	23.23 .09	25.54 .09
Oct. 6.4	41.23 .18	48.07 .12	49.78 .17	16.14 1.35	48.20 1.07	59.92 .20	23.12 .12	25.44 .13
16.3	41.04 -.19	47.94 -.14	49.59 -.19	14.60-1.53	49.36+1.22	59.71 -.22	23.00 -.14	25.31 -.15
26.3	40.83 .20	47.78 .15	49.39 .20	13.09 1.65	50.64 1.33	59.48 .24	22.85 .15	25.16 .16
Nov. 5.3	40.63 .21	47.62 .14	49.19 .21	11.39 1.71	51.99 1.37	59.23 .26	22.70 .16	25.00 .17
15.2	40.43 .19	47.49 .13	48.98 .20	9.67 1.70	53.38 1.38	58.97 .26	22.54 .15	24.82 .18
25.2	40.24 .18	47.36 .12	48.79 .20	7.99 1.62	54.76 1.34	58.72 .25	22.40 .13	24.66 .17
Dec. 5.2	40.07 -.17	47.25 -.11	48.60 -.19	6.44-1.48	56.06+1.27	58.48 -.25	22.26 -.10	24.50 -.14

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.								
Mean Solar Date.	ν Octantis.	γ Aquarii.	σ Aquarii.	α Lacertæ.	$\iota\alpha$ Lacertæ.	β Octantis.	λ Pegasi.	Groombr. 1706, S. P.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	176 30 h m 22 11	91 55 h m 22 16	101 13 h m 22 25	40 15 h m 22 27	51 29 h m 22 34	171 56 h m 22 35	66 59 h m 22 41	348 20 h m 22 51
July 8.6	75.04+2.95	20.22+.26	11.84+.27	2.93+.33	38.30+.30	38.95+1.36	34.01+.29	40.22-.63
18.6	77.75 2.46	20.47 .23	12.10 .24	3.23 .28	38.57 .26	40.26 1.24	34.28 .25	39.64 .52
28.6	79.97 1.95	20.68 .19	12.33 .20	3.47 .22	38.81 .22	41.40 1.03	34.52 .21	39.18 .39
Aug. 7.6	81.65 1.38	20.85 .15	12.51 .16	3.68 .16	39.01 .17	42.31 .78	34.70 .16	38.87 .23
17.5	82.72 .76	20.97 .11	12.64 .12	3.82 .10	39.15 .12	42.97 .52	34.85 .12	38.67-.12
27.5	83.17+.11	21.05+.06	12.74+.08	3.89+.05	39.25+.07	43.35+.24	34.96+.09	38.62+.02
Sept. 6.5	82.94-.56	21.09+.02	12.79+.04	3.92 .00	39.28+.02	43.45-.05	35.02+.05	38.72 .19
16.4	82.05 1.19	21.09-.02	12.80 .00	3.88-.06	39.28-.02	43.25 .35	35.04 .00	39.01 .56
26.4	80.56 1.79	21.06-.05	12.78-.04	3.80 .11	39.23 .06	42.76 .61	35.02-.04	39.45 .30
Oct. 6.4	78.47 2.35	20.99 .07	12.72 .07	3.68 .15	39.15 .10	42.03 .85	34.96 .07	40.01 .64
16.4	75.87-2.78	20.91-.09	12.63-.09	3.50-.18	39.02-.13	41.06-1.07	34.87-.09	40.73+.80
26.3	72.90 3.13	20.80 .11	12.52 .11	3.31 .21	38.88 .16	39.90 1.24	34.77 .11	41.61 .93
Nov. 5.3	69.61 3.37	20.68 .12	12.41 .12	3.09 .23	38.72 .17	38.58 1.37	34.65 .12	42.58 1.03
15.3	66.17 3.46	20.56 .11	12.29 .12	2.85 .24	38.54 .18	37.16 1.44	34.53 .13	43.67 1.13
25.3	62.70 3.43	20.45 .11	12.17 .11	2.61 .24	38.36 .18	35.70 1.44	34.39 .14	44.86 1.22
Dec. 5.2	59.32-3.26	20.33-.10	12.05-.10	2.37-.23	38.18-.18	34.27-1.40	34.26-.13	46.08+1.23
15.2	56.18-3.00	20.24-.09	11.95-.09	2.14-.22	38.00-.17	32.90-1.30	34.13-.12	47.32+1.26
Mean Solar Date.	α Androm.	ϕ Aquarii.	τ Pegasi.	λ Androm.	ι^1 Aquarii.	δ Sculptoris.	γ^1 Octantis.	33 Piscium.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
	48 14 h m 22 57	96 37 h m 23 8	66 50 h m 23 15	44 6 h m 23 32	108 51 h m 23 38	118 42 h m 23 43	172 36 h m 23 46	96 17 h m 24 0
July 28.6	11.20+.25	59.70+.24	32.49+.23	31.46+.30	52.03+.28	34.26+.29	12.48+1.40	3.98+.27
Aug. 7.6	11.43 .20	59.92 .20	32.71 .20	31.73 .25	52.28 .23	34.52 .25	13.79 1.22	4.23 .24
17.6	11.60 .15	60.09 .16	32.90 .16	31.96 .20	52.48 .19	34.75 .20	14.91 .99	4.46 .20
27.5	11.73 .10	60.23 .12	33.03 .12	32.13 .15	52.65 .15	34.92 .16	15.77 .71	4.64 .16
Sept. 6.5	11.80+.05	60.32 .08	33.13 .08	32.26 .10	52.78 .11	35.07 .12	16.33 .40	4.77 .12
16.5	11.82 .00	60.37+.04	33.18+.04	32.33+.05	52.88+.07	35.17+.07	16.58+.11	4.88+.09
26.5	11.81-.04	60.39 .00	33.20 .00	32.36+.01	52.92+.03	35.21+.03	16.56-.20	4.94 .05
Oct. 6.4	11.74 .08	60.38-.03	33.18-.04	32.35-.03	52.92-.01	35.22-.01	16.18 .52	4.97+.01
16.4	11.64 .12	60.34 .06	33.13 .07	32.28 .07	52.90 .04	35.19 .05	15.53 .80	4.97-.02
26.4	11.52 .15	60.25 .08	33.05 .09	32.19 .11	52.83 .07	35.11 .08	14.58 1.07	4.94 .04
Nov. 5.3	11.36-.17	60.16-.09	32.96-.10	32.06-.15	52.75-.09	35.02-.10	13.40-1.29	4.88-.06
15.3	11.19 .17	60.06 .10	32.85 .11	31.90 .17	52.65 .10	34.91 .11	12.01 1.45	4.80 .08
25.3	11.01 .18	59.96 .11	32.73 .12	31.72 .18	52.54 .11	34.79 .12	10.50 1.56	4.72 .09
Dec. 5.3	10.82 .18	59.85 .10	32.61 .12	31.53 .19	52.43 .12	34.65 .13	8.89 1.63	4.63 .10
15.2	10.64 .18	59.74 .09	32.48 .12	31.34 .19	52.31 .12	34.52 .13	7.25 1.62	4.53 .10
25.2	10.47-.18	59.65-.08	32.36-.11	31.15-.20	52.20-.11	34.39-.13	5.64 1.57	4.42-.10
35.2	10.28-.18	59.57-.06	32.25-.10	30.95-.19	52.09-.10	34.26-.12	4.12-1.45	4.32-.09

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Jan. 0	18 42 46.65	47.25	-23 5 25.5	24.9	11.050	+11.29	+ 3 17.20	16 18.41	1 11.10	18 39 29.50
1	18 47 11.63	12.32	23 0 40.8	40.1	11.037	12.43	3 45.64	16 18.42	1 11.06	18 43 26.06
2	18 51 36.29	37.06	22 55 28.6	27.6	11.022	13.57	4 13.75	16 18.42	1 11.01	18 47 22.62
3	18 56 0.61	1.47	22 49 49.0	47.8	11.006	14.71	4 41.52	16 18.41	1 10.96	18 51 19.18
4	19 0 24.56	25.49	22 43 42.3	40.8	10.989	15.84	5 8.91	16 18.40	1 10.91	18 55 15.74
5	19 4 48.10	49.13	-22 37 8.3	6.8	10.972	+16.97	+ 5 35.91	16 18.37	1 10.85	18 59 12.30
6	19 9 11.23	12.33	22 30 7.7	5.8	10.954	18.09	6 2.49	16 18.34	1 10.79	19 3 8.86
7	19 13 33.90	35.09	22 22 40.3	38.1	10.935	19.20	6 28.60	16 18.31	1 10.73	19 7 5.41
8	19 17 56.10	57.35	22 14 46.3	44.0	10.915	20.29	6 54.24	16 18.27	1 10.66	19 11 1.97
9	19 22 17.80	19.12	22 6 26.2	23.6	10.893	21.38	7 19.39	16 18.23	1 10.58	19 14 58.53
10	19 26 38.96	40.35	-21 57 40.1	37.3	10.871	+22.46	+ 7 44.00	16 18.18	1 10.50	19 18 55.09
11	19 30 59.56	61.03	21 48 28.2	25.1	10.847	23.53	8 8.05	16 18.13	1 10.42	19 22 51.65
12	19 35 19.59	21.13	21 38 50.9	47.4	10.821	24.58	8 31.51	16 18.08	1 10.34	19 26 48.21
13	19 39 39.01	40.60	21 28 48.2	44.4	10.795	25.63	8 54.38	16 18.02	1 10.26	19 30 44.77
14	19 43 57.78	59.44	21 18 20.7	16.6	10.768	26.66	9 16.60	16 17.96	1 10.17	19 34 41.32
15	19 48 15.92	17.64	-21 7 28.6	24.0	10.741	+27.68	+ 9 38.18	16 17.89	1 10.08	19 38 37.88
16	19 52 33.36	35.15	20 56 12.1	7.2	10.713	28.68	9 59.06	16 17.82	1 9.99	19 42 34.44
17	19 56 50.11	51.94	20 44 31.8	26.6	10.683	29.67	10 19.25	16 17.74	1 9.89	19 46 31.00
18	20 1 6.14	8.03	20 32 27.7	22.2	10.652	30.65	10 38.71	16 17.66	1 9.79	19 50 27.56
19	20 5 21.42	23.36	20 19 60.4	54.5	10.621	31.61	10 57.43	16 17.58	1 9.69	19 54 24.11
20	20 9 35.94	37.94	-20 7 10.3	4.1	10.589	+32.56	+11 15.40	16 17.50	1 9.59	19 58 20.67
21	20 13 49.69	51.72	19 53 57.4	51.0	10.557	33.50	11 32.60	16 17.41	1 9.49	20 2 17.23
22	20 18 2.65	4.73	19 40 22.6	15.9	10.524	34.41	11 49.00	16 17.32	1 9.38	20 6 13.79
23	20 22 14.82	16.94	19 26 26.0	18.9	10.490	35.31	12 4.61	16 17.22	1 9.28	20 10 10.34
24	20 26 26.19	28.34	19 12 8.0	0.5	10.457	36.19	12 19.42	16 17.11	1 9.17	20 14 6.90
25	20 30 36.75	38.92	-18 57 28.8	21.0	10.423	+37.06	+12 33.40	16 17.00	1 9.06	20 18 3.46
26	20 34 46.48	48.70	18 42 29.0	20.9	10.389	37.91	12 46.58	16 16.88	1 8.95	20 22 0.02
27	20 38 55.40	57.64	18 27 9.0	0.5	10.353	38.75	12 58.93	16 16.76	1 8.84	20 25 56.57
28	20 43 3.49	5.76	18 11 29.0	20.2	10.320	39.57	13 10.47	16 16.64	1 8.72	20 29 53.13
29	20 47 10.76	13.06	17 55 29.4	20.4	10.286	40.38	13 21.17	16 16.51	1 8.61	20 33 49.69
30	20 51 17.22	19.53	-17 39 10.7	1.3	10.252	+41.17	+13 31.06	16 16.37	1 8.49	20 37 46.24
31	20 55 22.86	25.19	17 22 33.2	23.5	10.218	41.94	13 40.14	16 16.23	1 8.38	20 41 42.80
Feb 1	20 59 27.69	30.03	17 5 37.1	27.3	10.184	42.71	13 48.40	16 16.08	1 8.26	20 45 39.36
2	21 3 31.70	34.05	16 48 23.2	12.9	10.151	43.45	13 55.84	16 15.93	1 8.15	20 49 35.91
3	21 7 34.90	37.26	16 30 51.5	41.1	10.117	44.17	14 2.49	16 15.77	1 8.04	20 53 32.47
4	21 11 37.30	39.67	-16 12 62.5	51.9	10.084	+44.88	+14 8.33	16 15.60	1 7.92	20 57 29.03
5	21 15 38.91	41.29	15 54 56.7	45.8	10.051	45.59	14 13.37	16 15.43	1 7.81	21 1 25.58
6	21 19 39.72	42.11	15 36 34.4	23.3	10.018	46.26	14 17.62	16 15.26	1 7.69	21 5 22.14
7	21 23 39.76	42.15	15 17 56.0	44.7	9.985	46.93	14 21.09	16 15.08	1 7.58	21 9 18.69
8	21 27 39.00	41.39	14 58 62.0	50.5	9.952	47.56	14 23.77	16 14.90	1 7.47	21 13 15.25
9	21 31 37.47	39.86	-14 39 52.7	41.0	9.920	+48.19	+14 25.67	16 14.72	1 7.35	21 17 11.81
10	21 35 35.16	37.54	14 20 28.6	16.7	9.888	48.85	14 26.81	16 14.53	1 7.24	21 21 8.36
11	21 39 32.09	34.46	14 0 50.1	38.2	9.856	49.39	14 27.17	16 14.34	1 7.13	21 25 4.92
12	21 43 28.25	30.61	13 40 57.7	45.6	9.824	49.96	14 26.76	16 14.15	1 7.02	21 29 1.47
13	21 47 23.65	26.01	13 20 51.7	39.6	9.793	50.52	14 25.61	16 13.96	1 6.92	21 32 58.03
14	21 51 18.32	20.65	-13 0 32.7	20.4	9.761	+51.05	+14 23.70	16 13.76	1 6.81	21 36 54.59
15	21 55 12.24	14.56	12 39 61.2	48.8	9.731	+51.57	+14 21.06	16 13.56	1 6.71	21 40 51.14

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s.	s	° ' "	"	s	"	m s	' "	m s	h m s
Feb. 15	21 55 12.24	14.56	-12 39 61.2	48.8	9.731	+51.57	+14 21.06	16 13.56	1 6.71	21 40 51.14
16	21 59 5.41	7.72	12 19 17.4	4.9	9.701	52.06	14 17.67	16 13.36	1 6.60	21 44 47.69
17	22 2 57.86	60.16	11 58 21.9	9.4	9.671	52.55	14 13.57	16 13.16	1 6.50	21 48 44.25
18	22 6 49.60	51.88	11 37 15.2	2.6	9.641	53.01	14 8.76	16 12.95	1 6.40	21 52 40.81
19	22 10 40.64	42.89	11 15 57.4	44.9	9.612	53.45	14 3.23	16 12.74	1 6.30	21 56 37.36
20	22 14 30.99	33.21	-10 54 29.5	16.9	9.584	+53.88	+13 57.00	16 12.53	1 6.21	22 0 33.91
21	22 18 20.64	22.85	10 32 51.4	38.9	9.556	54.28	13 50.11	16 12.32	1 6.11	22 4 30.47
22	22 22 9.65	11.82	10 10 63.8	51.2	9.528	54.67	13 42.55	16 12.10	1 6.02	22 8 27.03
23	22 25 58.01	60.15	9 48 66.9	54.4	9.502	55.05	13 34.35	16 11.88	1 5.93	22 12 23.58
24	22 29 45.74	47.87	9 26 61.3	48.8	9.477	55.40	13 25.52	16 11.65	1 5.84	22 16 20.13
25	22 33 32.86	34.94	-9 4 47.2	34.8	9.452	+55.75	+13 16.08	16 11.43	1 5.76	22 20 16.69
26	22 37 19.40	21.45	8 42 25.2	12.9	9.427	56.08	13 6.06	16 11.20	1 5.68	22 24 13.24
27	22 41 5.36	7.39	8 19 55.5	43.2	9.404	56.38	12 55.46	16 10.96	1 5.60	22 28 9.80
28	22 44 50.77	52.77	7 57 18.5	6.4	9.382	56.68	12 44.33	16 10.72	1 5.52	22 32 6.35
29	22 48 35.66	37.61	7 34 34.5	22.6	9.361	56.97	12 32.65	16 10.48	1 5.45	22 36 2.91
Mar. 1	22 52 20.05	21.97	-7 11 44.1	32.3	9.340	+57.23	+12 20.47	16 10.24	1 5.38	22 39 59.46
2	22 56 3.94	5.82	6 48 47.4	35.8	9.320	57.48	12 7.82	16 9.99	1 5.31	22 43 56.01
3	22 59 47.39	49.24	6 25 45.1	33.6	9.301	57.72	11 54.70	16 9.73	1 5.24	22 47 52.57
4	23 3 30.38	32.20	6 2 37.2	25.9	9.283	57.93	11 41.15	16 9.47	1 5.17	22 51 49.12
5	23 7 12.97	14.74	5 39 24.3	13.1	9.266	58.13	11 27.18	16 9.21	1 5.11	22 55 45.67
6	23 10 55.15	56.88	-5 15 66.6	55.6	9.250	+58.32	+11 12.81	16 8.95	1 5.05	22 59 42.23
7	23 14 36.96	38.65	4 52 44.6	33.9	9.235	58.49	10 58.07	16 8.68	1 4.99	23 3 38.78
8	23 18 18.41	20.06	4 29 18.7	8.2	9.220	58.65	10 42.96	16 8.42	1 4.94	23 7 35.34
9	23 21 59.52	61.14	4 5 49.3	39.0	9.206	58.79	10 27.51	16 8.15	1 4.89	23 11 31.89
10	23 25 40.30	41.86	3 42 16.6	6.5	9.193	58.91	10 11.74	16 7.89	1 4.84	23 15 28.44
11	23 29 20.79	22.30	-3 18 41.3	31.4	9.181	+59.02	+9 55.67	16 7.62	1 4.79	23 19 25.00
12	23 33 0.98	2.46	2 54 63.6	54.1	9.170	59.11	9 39.32	16 7.35	1 4.75	23 23 21.55
13	23 36 40.91	42.34	2 31 23.9	14.6	9.159	59.18	9 22.69	16 7.08	1 4.71	23 27 18.11
14	23 40 20.58	21.97	2 7 42.8	33.7	9.148	59.24	9 5.81	16 6.81	1 4.67	23 31 14.66
15	23 44 0.02	1.36	1 43 60.4	51.7	9.139	59.28	8 48.70	16 6.54	1 4.64	23 35 11.21
16	23 47 39.24	40.53	-1 20 17.3	8.8	9.130	+59.30	+8 31.37	16 6.28	1 4.61	23 39 7.77
17	23 51 18.25	19.50	0 56 33.8	25.7	9.122	59.31	8 13.83	16 6.01	1 4.59	23 43 4.32
18	23 54 57.08	58.30	0 32 50.6	42.6	9.115	59.30	7 56.11	16 5.74	1 4.57	23 47 0.87
19	23 58 35.76	36.91	-0 8 67.6	59.9	9.108	59.27	7 38.23	16 5.47	1 4.55	23 50 57.43
20	0 2 14.27	15.39	+0 14 34.5	41.8	9.102	59.23	7 20.20	16 5.20	1 4.53	23 54 53.98
21	0 5 52.66	53.73	+0 38 15.5	22.4	9.097	+59.18	+7 2.05	16 4.94	1 4.51	23 58 50.53
22	0 9 30.95	31.97	1 1 54.9	61.5	9.093	59.10	6 43.79	16 4.67	1 4.50	0 2 47.09
23	0 13 9.15	10.13	1 25 32.5	38.8	9.090	59.01	6 25.43	16 4.40	1 4.49	0 6 43.64
24	0 16 47.27	48.21	1 49 7.8	13.9	9.088	58.91	6 7.01	16 4.13	1 4.48	0 10 40.19
25	0 20 25.37	26.24	2 12 40.5	46.3	9.087	58.80	5 48.53	16 3.85	1 4.48	0 14 36.75
26	0 24 3.42	4.26	+2 36 10.4	15.8	9.086	+58.68	+5 30.05	16 3.58	1 4.48	0 18 33.30
27	0 27 41.48	42.27	2 59 37.0	42.1	9.086	58.54	5 11.56	16 3.31	1 4.48	0 22 29.85
28	0 31 19.58	20.31	3 23 0.1	4.9	9.088	58.38	4 53.10	16 3.03	1 4.49	0 26 26.41
29	0 34 57.71	58.40	3 46 19.3	23.8	9.091	58.21	4 34.70	16 2.75	1 4.50	0 30 22.96
30	0 38 35.92	36.57	4 9 34.4	38.5	9.094	58.03	4 16.35	16 2.47	1 4.51	0 34 19.51
31	0 42 14.22	14.82	+4 32 44.9	48.8	9.098	+57.84	+4 3 58.11	16 2.19	1 4.52	0 38 16.07
32	0 45 52.64	53.19	+4 55 50.7	54.1	9.103	+57.63	+3 39.97	16 1.91	1 4.54	0 42 12.62

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
Apr.	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
1	0 45 52.64	53.19	+ 4 55 50.7	54.1	9.103	+57.63	+3 39.97	16 1.91	1 4.54	0 42 12.62
2	0 49 31.19	31.70	5 18 51.3	54.4	9.109	57.41	3 21.97	16 1.63	1 4.56	0 46 9.18
3	0 53 9.91	10.37	5 41 46.3	49.2	9.117	57.18	3 4.14	16 1.35	1 4.58	0 50 5.73
4	0 56 48.80	49.22	6 4 35.6	38.3	9.125	56.92	2 46.48	16 1.07	1 4.61	0 54 2.28
5	1 0 27.89	28.27	6 27 18.8	21.1	9.134	56.66	2 29.02	16 0.78	1 4.64	0 57 58.84
6	1 4 7.21	7.54	+ 6 49 55.4	57.5	9.143	+56.38	+2 11.79	16 0.50	1 4.67	1 1 55.39
7	1 7 46.75	47.04	7 12 25.2	26.9	9.153	56.09	1 54.78	16 0.22	1 4.70	1 5 51.95
8	1 11 26.55	26.80	7 34 47.7	49.3	9.164	55.78	1 38.04	15 59.94	1 4.74	1 9 48.50
9	1 15 6.62	6.83	7 57 2.6	4.0	9.176	55.46	1 21.56	15 59.66	1 4.78	1 13 45.05
10	1 18 46.98	47.14	8 19 9.7	10.7	9.188	55.12	1 5.36	15 59.39	1 4.82	1 17 41.61
11	1 22 27.63	27.75	+ 8 41 8.5	9.2	9.200	+54.76	+0 49.46	15 59.11	1 4.86	1 21 38.16
12	1 26 8.59	8.68	9 2 58.6	59.1	9.213	54.40	0 33.87	15 58.84	1 4.91	1 25 34.72
13	1 29 49.88	49.92	9 24 39.6	39.8	9.227	54.01	0 18.60	15 58.57	1 4.95	1 29 31.27
14	1 33 31.49	31.50	9 46 11.2	11.3	9.241	53.61	+0 3.68	15 58.31	1 5.00	1 33 27.83
15	1 37 13.46	13.43	10 7 33.1	32.9	9.256	53.20	-0 10.91	15 58.04	1 5.06	1 37 24.38
16	1 40 55.79	55.72	+10 28 44.8	44.5	9.271	+52.77	-0 25.14	15 57.78	1 5.11	1 41 20.93
17	1 44 38.48	38.38	10 49 46.1	45.6	9.287	52.32	0 39.00	15 57.53	1 5.17	1 45 17.49
18	1 48 21.56	21.42	11 10 36.6	35.8	9.303	51.87	0 52.48	15 57.27	1 5.23	1 49 14.04
19	1 52 5.02	4.86	11 31 16.0	15.0	9.320	51.40	1 5.56	15 57.02	1 5.29	1 53 10.60
20	1 55 48.90	48.71	11 51 43.8	42.7	9.337	50.92	1 18.24	15 56.77	1 5.35	1 57 7.15
21	1 59 33.20	32.97	+12 11 59.9	58.6	9.355	+50.42	-1 30.50	15 56.52	1 5.42	2 1 3.71
22	2 3 17.93	17.66	12 32 3.9	2.4	9.373	49.91	1 42.33	15 56.27	1 5.48	2 5 0.26
23	2 7 3.10	2.80	12 51 55.5	53.8	9.392	49.39	1 53.70	15 56.02	1 5.55	2 8 56.82
24	2 10 48.73	48.41	13 11 34.3	32.6	9.411	48.85	2 4.62	15 55.77	1 5.62	2 12 53.37
25	2 14 34.84	34.49	13 30 60.1	58.3	9.431	48.30	2 15.08	15 55.52	1 5.69	2 16 49.93
26	2 18 21.44	21.05	+13 50 12.6	10.7	9.451	+47.74	-2 25.03	15 55.28	1 5.76	2 20 46.48
27	2 22 8.52	8.12	14 9 11.5	9.5	9.473	47.16	2 34.49	15 55.03	1 5.84	2 24 43.04
28	2 25 56.14	55.70	14 27 56.5	54.4	9.495	46.57	2 43.44	15 54.79	1 5.92	2 28 39.59
29	2 29 44.26	43.81	14 46 27.2	25.0	9.517	45.98	2 51.88	15 54.55	1 5.99	2 32 36.15
30	2 33 32.92	32.45	15 4 43.5	41.2	9.539	45.37	2 59.76	15 54.31	1 6.07	2 36 32.71
May	2 37 22.14	21.64	+15 22 44.9	42.6	9.562	+44.74	-3 7.11	15 54.07	1 6.15	2 40 29.26
	2 41 11.91	11.40	15 40 31.2	28.8	9.585	44.10	3 13.88	15 53.83	1 6.23	2 44 25.82
	2 45 2.26	1.73	15 57 62.0	59.6	9.609	43.46	3 20.10	15 53.59	1 6.31	2 48 22.37
	2 48 53.17	52.62	16 15 17.2	14.7	9.633	42.79	3 25.75	15 53.36	1 6.39	2 52 18.93
	2 52 44.65	44.09	16 32 16.2	13.7	9.657	42.11	3 30.81	15 53.12	1 6.47	2 56 15.49
	2 56 36.74	36.16	+16 48 58.8	56.4	9.681	+41.43	-3 35.29	15 52.89	1 6.55	3 0 12.04
	3 0 29.41	28.82	17 5 24.8	22.3	9.706	40.73	3 39.19	15 52.67	1 6.63	3 4 8.60
	3 4 22.65	22.06	17 21 33.7	31.2	9.731	40.01	3 42.49	15 52.45	1 6.71	3 8 5.15
	3 8 16.50	15.89	17 37 25.4	22.9	9.755	39.28	3 45.20	15 52.23	1 6.79	3 12 1.71
	3 12 10.93	10.31	17 52 59.3	56.8	9.780	38.54	3 47.34	15 52.02	1 6.87	3 15 58.27
	3 16 5.94	5.32	+18 8 15.3	12.8	9.804	+37.79	-3 48.88	15 51.81	1 6.96	3 19 54.82
	3 20 1.52	0.90	18 23 13.0	10.6	9.828	37.01	3 49.86	15 51.60	1 7.04	3 23 51.38
	3 23 57.69	57.06	18 37 52.1	49.7	9.852	36.23	3 50.25	15 51.40	1 7.12	3 27 47.94
	3 27 54.41	53.78	18 52 12.3	9.9	9.876	35.44	3 50.08	15 51.20	1 7.20	3 31 44.49
	3 31 51.70	51.07	19 6 13.3	11.0	9.899	34.64	3 49.35	15 51.01	1 7.28	3 35 41.05
	3 35 49.55	48.92	+19 19 55.0	52.9	9.922	+33.82	-3 48.06	15 50.82	1 7.36	3 39 37.61
	3 39 47.95	47.32	+19 33 16.9	14.8	9.944	+33.00	-3 46.22	15 50.63	1 7.44	3 43 34.17

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
May 17	3 39 47.95	47.32	+19 33 16.9	14.8	9.944	+33.00	-3 46.22	15 50.63	1 7.44	3 43 34.17
18	3 43 46.87	46.25	19 46 18.8	16.7	9.967	32.16	3 43.86	15 50.45	1 7.52	3 47 30.72
19	3 47 46.34	45.73	19 58 60.4	58.5	9.989	31.31	3 40.96	15 50.28	1 7.60	3 51 27.28
20	3 51 46.33	45.72	20 11 21.6	19.7	10.010	30.45	3 37.52	15 50.11	1 7.67	3 55 23.84
21	3 55 46.83	46.24	20 23 22.2	20.3	10.031	29.58	3 33.57	15 49.94	1 7.74	3 59 20.40
22	3 59 47.84	47.26	+20 34 61.6	59.9	10.052	+28.70	-3 29.12	15 49.77	1 7.82	4 3 16.95
23	4 3 49.36	48.79	20 46 20.0	18.4	10.073	27.82	3 24.16	15 49.61	1 7.89	4 7 13.51
24	4 7 51.38	50.82	20 57 17.0	15.4	10.094	26.93	3 18.71	15 49.45	1 7.96	4 11 10.07
25	4 11 53.87	53.34	21 7 52.3	50.9	10.114	26.02	3 12.77	15 49.29	1 8.03	4 15 6.63
26	4 15 56.86	56.33	21 18 5.8	4.6	10.134	25.10	3 6.35	15 49.13	1 8.10	4 19 3.18
27	4 19 60.30	59.80	+21 27 57.4	56.2	10.153	+24.18	-2 59.45	15 48.98	1 8.16	4 22 59.74
28	4 24 4.22	3.74	21 37 26.8	25.6	10.172	23.26	2 52.10	15 48.83	1 8.23	4 26 56.30
29	4 28 8.59	8.12	21 46 33.7	32.7	10.191	22.32	2 44.28	15 48.68	1 8.29	4 30 52.86
30	4 32 13.41	12.96	21 55 18.0	17.1	10.210	21.37	2 36.03	15 48.53	1 8.35	4 34 49.42
31	4 36 18.66	18.23	22 3 39.6	38.8	10.228	20.41	2 27.33	15 48.39	1 8.41	4 38 45.97
June 1	4 40 24.32	23.92	+22 11 38.2	37.4	10.244	+19.45	-2 18.24	15 48.25	1 8.46	4 42 42.53
2	4 44 30.38	30.02	22 19 13.5	12.9	10.260	18.48	2 8.72	15 48.11	1 8.51	4 46 39.09
3	4 48 36.84	36.50	22 26 25.7	25.1	10.276	17.51	1 58.83	15 47.98	1 8.56	4 50 35.65
4	4 52 43.67	43.35	22 33 14.3	13.8	10.292	16.53	1 48.56	15 47.85	1 8.61	4 54 32.21
5	4 56 50.84	50.55	22 39 39.2	38.8	10.306	15.55	1 37.94	15 47.72	1 8.66	4 58 28.77
6	5 0 58.35	58.10	+22 45 40.3	39.9	10.320	+14.55	-1 26.98	15 47.60	1 8.70	5 2 25.32
7	5 5 6.17	5.95	22 51 17.5	17.1	10.332	13.55	1 15.73	15 47.49	1 8.74	5 6 21.88
8	5 9 14.27	14.09	22 56 30.6	30.4	10.343	12.54	1 4.18	15 47.38	1 8.77	5 10 18.44
9	5 13 22.64	22.49	23 1 19.4	19.3	10.353	11.53	0 52.37	15 47.28	1 8.81	5 14 15.00
10	5 17 31.24	31.13	23 5 44.0	43.9	10.363	10.51	0 40.33	15 47.18	1 8.84	5 18 11.56
11	5 21 40.05	39.97	+23 9 44.1	44.0	10.371	+9.49	-0 28.07	15 47.08	1 8.86	5 22 8.12
12	5 25 49.05	48.99	23 13 19.7	19.7	10.378	8.47	0 15.63	15 46.99	1 8.88	5 26 4.67
13	5 29 58.20	58.18	23 16 30.7	30.7	10.384	7.45	-0 3.03	15 46.91	1 8.90	5 30 1.23
14	5 34 7.48	7.51	23 19 17.1	17.1	10.389	6.42	+0 9.69	15 46.84	1 8.92	5 33 57.79
15	5 38 16.87	16.93	23 21 38.7	38.7	10.393	5.39	0 22.52	15 46.77	1 8.94	5 37 54.35
16	5 42 26.34	26.44	+23 23 35.8	35.8	10.395	+4.36	+0 35.43	15 46.70	1 8.95	5 41 50.91
17	5 46 35.86	36.00	23 25 7.9	7.9	10.397	3.33	0 48.39	15 46.64	1 8.96	5 45 47.47
18	5 50 45.40	45.58	23 26 15.2	15.2	10.398	2.29	1 1.38	15 46.58	1 8.97	5 49 44.03
19	5 54 54.96	55.18	23 26 57.8	57.8	10.398	1.26	1 14.38	15 46.53	1 8.97	5 53 40.59
20	5 59 4.50	4.74	23 27 15.7	15.7	10.397	+0.23	1 27.36	15 46.48	1 8.97	5 57 37.15
21	6 3 14.00	14.29	+23 27 8.8	8.7	10.394	-0.80	+1 40.30	15 46.43	1 8.97	6 1 33.70
22	6 7 23.43	23.76	23 26 37.1	37.0	10.391	1.83	1 53.18	15 46.39	1 8.96	6 5 30.26
23	6 11 32.78	33.14	23 25 40.7	40.5	10.387	2.86	2 5.97	15 46.35	1 8.95	6 9 26.82
24	6 15 42.03	42.43	23 24 19.6	19.3	10.383	3.89	2 18.67	15 46.32	1 8.94	6 13 23.38
25	6 19 51.16	51.59	23 22 33.8	33.5	10.378	4.92	2 31.25	15 46.29	1 8.92	6 17 19.94
26	6 24 0.16	0.62	+23 20 23.4	23.1	10.372	-5.95	+2 43.68	15 46.26	1 8.90	6 21 16.50
27	6 28 8.99	9.49	23 17 48.5	48.2	10.364	6.97	2 55.95	15 46.24	1 8.87	6 25 13.06
28	6 32 17.65	18.19	23 14 49.0	48.6	10.356	7.99	3 8.06	15 46.21	1 8.84	6 29 9.61
29	6 36 26.12	26.69	23 11 25.1	24.7	10.348	9.00	3 19.97	15 46.19	1 8.81	6 33 6.17
30	6 40 34.36	34.97	23 7 36.9	36.3	10.339	10.02	3 31.66	15 46.17	1 8.78	6 37 2.73
31	6 44 42.38	43.02	+23 3 24.4	23.7	10.329	-11.03	+3 43.12	15 46.16	1 8.74	6 40 59.29
32	6 48 50.15	50.81	+22 58 47.6	46.9	10.318	-12.03	+3 54.32	15 46.15	1 8.70	6 44 55.85

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
July	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
	6 44 42.38	43.02	+23 3 24.4	23.7	10.329	-11.03	+3 43.12	15 46.16	1 8.74	6 40 59.29
	6 48 50.15	50.81	22 58 47.6	46.9	10.318	12.03	3 54.32	15 46.15	1 8.70	6 44 55.85
	6 52 57.64	58.33	22 53 46.9	46.1	10.306	13.03	4 5.26	15 46.15	1 8.66	6 48 52.41
	6 57 4.83	5.56	22 48 22.2	21.2	10.293	14.03	4 15.89	15 46.15	1 8.62	6 52 48.97
	7 1 11.71	12.47	22 42 33.6	32.5	10.280	15.02	4 26.21	15 46.16	1 8.57	6 56 45.52
	7 5 18.24	19.03	+22 36 21.3	20.0	10.265	-16.00	+4 36.20	15 46.17	1 8.52	7 0 42.08
	7 9 24.42	25.24	22 29 45.3	44.1	10.250	16.98	4 45.83	15 46.18	1 8.46	7 4 38.64
	7 13 30.23	31.07	22 22 46.1	44.6	10.233	17.96	4 55.07	15 46.21	1 8.41	7 8 35.20
	7 17 35.64	36.50	22 15 23.6	22.0	10.216	18.92	5 3.91	15 46.24	1 8.35	7 12 31.76
	7 21 40.62	41.51	22 7 38.0	36.3	10.198	19.87	5 12.34	15 46.27	1 8.29	7 16 28.32
	7 25 45.16	46.06	+21 59 29.6	27.7	10.179	-20.82	+5 20.31	15 46.31	1 8.23	7 20 24.87
	7 29 49.24	50.16	21 50 58.5	56.6	10.160	21.76	5 27.83	15 46.35	1 8.16	7 24 21.43
	7 33 52.84	53.77	21 42 5.1	2.9	10.140	22.69	5 34.86	15 46.40	1 8.10	7 28 17.99
	7 37 55.93	56.89	21 32 49.3	47.1	10.118	23.61	5 41.40	15 46.46	1 8.03	7 32 14.55
	7 41 58.51	59.48	21 23 11.6	9.3	10.096	24.52	5 47.43	15 46.52	1 7.96	7 36 11.11
	7 46 0.56	1.55	+21 13 12.2	9.7	10.074	-25.42	+5 52.92	15 46.58	1 7.88	7 40 7.67
	7 50 2.06	3.07	21 2 51.2	48.6	10.051	26.31	5 57.87	15 46.66	1 7.80	7 44 4.22
	7 54 3.03	4.04	20 52 8.9	6.3	10.028	27.20	6 2.26	15 46.74	1 7.73	7 48 0.78
	7 58 3.41	4.43	20 41 5.6	2.8	10.005	28.07	6 6.09	15 46.82	1 7.65	7 51 57.34
	8 2 3.24	4.26	20 29 41.5	38.5	9.981	28.93	6 9.35	15 46.90	1 7.57	7 55 53.90
	8 6 2.49	3.52	+20 17 56.7	53.6	9.957	-29.78	+6 12.03	15 46.98	1 7.49	7 59 50.45
	8 10 1.14	2.17	20 5 51.7	48.5	9.932	30.63	6 14.14	15 47.07	1 7.41	8 3 47.01
	8 13 59.21	60.24	19 53 26.6	23.3	9.908	31.46	6 15.65	15 47.17	1 7.33	8 7 43.57
	8 17 56.70	57.73	19 40 41.6	38.3	9.883	32.28	6 16.57	15 47.26	1 7.25	8 11 40.13
	8 21 53.59	54.62	19 27 37.0	33.6	9.858	33.09	6 16.90	15 47.36	1 7.17	8 15 36.68
	8 25 49.88	50.92	+19 14 13.3	9.7	9.834	-33.89	+6 16.64	15 47.46	1 7.08	8 19 33.24
	8 29 45.60	46.62	19 0 30.3	26.7	9.809	34.68	6 15.80	15 47.57	1 7.00	8 23 29.80
	8 33 40.71	41.73	18 46 28.5	24.8	9.785	35.46	6 14.35	15 47.68	1 6.91	8 27 26.35
	8 37 35.24	36.25	18 32 8.0	4.3	9.760	36.23	6 12.32	15 47.79	1 6.82	8 31 22.91
	8 41 29.18	30.19	18 17 29.2	25.5	9.735	36.99	6 9.70	15 47.90	1 6.74	8 35 19.47
	8 45 22.53	23.52	+18 2 32.5	28.7	9.711	-37.74	+6 6.49	15 48.02	1 6.65	8 39 16.03
Aug.	8 49 15.30	16.27	17 47 17.8	14.0	9.687	38.47	6 2.70	15 48.14	1 6.56	8 43 12.58
	8 53 7.48	8.44	17 31 45.7	41.8	9.662	39.19	5 58.32	15 48.27	1 6.48	8 47 9.14
	8 56 59.08	60.02	17 15 56.4	52.5	9.638	39.91	5 53.36	15 48.40	1 6.39	8 51 5.69
	9 0 50.08	51.01	16 59 50.2	46.4	9.613	40.61	5 47.81	15 48.53	1 6.30	8 55 2.25
	9 4 40.51	41.42	+16 43 27.3	23.4	9.589	-41.29	+5 41.68	15 48.67	1 6.22	8 58 58.81
	9 8 30.35	31.25	16 26 48.1	44.3	9.565	41.96	5 34.96	15 48.81	1 6.13	9 2 55.37
	9 12 19.62	20.49	16 9 53.0	49.1	9.541	42.62	5 27.67	15 48.96	1 6.05	9 6 51.92
	9 16 8.31	9.15	15 52 42.2	38.4	9.517	43.27	5 19.79	15 49.11	1 5.96	9 10 48.48
	9 19 56.40	57.22	15 35 16.0	12.4	9.493	43.90	5 11.34	15 49.27	1 5.88	9 14 45.03
	9 23 43.94	44.73	+15 17 35.0	31.3	9.469	-44.52	+5 2.32	15 49.44	1 5.80	9 18 41.59
	9 27 30.90	31.66	14 59 39.2	35.6	9.445	45.12	4 52.71	15 49.61	1 5.72	9 22 38.15
	9 31 17.29	18.02	14 41 29.1	25.6	9.421	45.71	4 42.55	15 49.78	1 5.64	9 26 34.70
	9 35 3.11	3.82	14 23 4.9	1.6	9.398	46.29	4 31.82	15 49.96	1 5.56	9 30 31.26
	9 38 48.38	49.07	14 4 27.3	23.9	9.375	46.85	4 20.54	15 50.14	1 5.48	9 34 27.81
	9 42 33.11	33.76	+13 45 36.1	32.9	9.352	-47.40	+4 8.71	15 50.32	1 5.41	9 38 24.37
	9 46 17.30	17.92	+13 26 32.1	29.0	9.330	-47.93	+3 56.34	15 50.51	1 5.33	9 42 20.92

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Aug. 16	9 46 17.30	17.92	+13 26 32.1	29.0	9.330	-47.93	+ 3 56.34	15 50.51	1 5.33	9 42 20.92
17	9 50 0.96	1.54	13 7 15.3	12.3	9.309	48.46	3 43.45	15 50.70	1 5.26	9 46 17.48
18	9 53 44.10	44.64	12 47 46.2	43.4	9.288	48.97	3 30.04	15 50.90	1 5.19	9 50 14.03
19	9 57 26.74	27.25	12 28 4.9	2.2	9.267	49.46	3 16.12	15 51.10	1 5.12	9 54 10.59
20	10 1 8.90	9.37	12 8 11.8	9.3	9.247	49.94	3 1.73	15 51.30	1 5.05	9 58 7.14
21	10 4 50.58	51.01	+11 48 7.5	5.1	9.227	-50.42	+ 2 46.85	15 51.50	1 4.98	10 2 3.70
22	10 8 31.81	32.20	11 27 51.7	49.7	9.208	50.88	2 31.52	15 51.70	1 4.92	10 6 0.25
23	10 12 12.59	12.94	11 7 25.3	23.3	9.190	51.32	2 15.76	15 51.91	1 4.86	10 9 56.81
24	10 15 52.95	53.26	10 46 48.2	46.5	9.173	51.76	1 59.57	15 52.12	1 4.80	10 13 53.36
25	10 19 32.91	33.18	10 25 60.8	59.4	9.157	52.18	1 42.97	15 52.33	1 4.74	10 17 49.92
26	10 23 12.48	12.70	+10 5 3.4	2.3	9.141	-52.60	+ 1 25.99	15 52.54	1 4.68	10 21 46.47
27	10 26 51.70	51.87	9 43 56.2	55.3	9.126	52.99	1 8.66	15 52.76	1 4.62	10 25 43.03
28	10 30 30.56	30.69	9 22 39.7	39.1	9.112	53.38	0 50.96	15 52.98	1 4.57	10 29 39.58
29	10 34 9.07	9.16	9 1 14.1	13.7	9.098	53.75	0 32.94	15 53.20	1 4.52	10 33 36.14
30	10 37 47.28	47.32	8 39 39.7	39.5	9.085	54.10	+ 0 14.59	15 53.42	1 4.47	10 37 32.69
31	10 41 25.20	25.19	+ 8 17 56.9	56.9	9.074	-54.45	- 0 4.05	15 53.64	1 4.42	10 41 29.25
Sept. 1	10 45 2.83	2.77	7 56 5.8	6.2	9.063	54.79	0 22.97	15 53.86	1 4.38	10 45 25.80
2	10 48 40.19	40.08	7 34 6.9	7.6	9.052	55.11	0 42.15	15 54.09	1 4.34	10 49 22.35
3	10 52 17.31	17.15	7 12 0.5	1.6	9.042	55.41	1 1.59	15 54.32	1 4.30	10 53 18.91
4	10 55 54.19	53.99	6 49 47.0	48.4	9.033	55.70	1 21.25	15 54.55	1 4.27	10 57 15.46
5	10 59 30.85	30.60	+ 6 27 26.8	28.4	9.023	-55.98	- 1 41.13	15 54.79	1 4.23	11 1 12.02
6	11 3 7.31	7.01	6 5 0.0	2.0	9.015	56.24	2 1.22	15 55.03	1 4.20	11 5 8.57
7	11 6 43.59	43.24	5 42 27.3	29.6	9.008	56.49	2 21.50	15 55.28	1 4.18	11 9 5.12
8	11 10 19.70	19.29	5 19 48.8	51.4	9.001	56.72	2 41.94	15 55.53	1 4.16	11 13 1.68
9	11 13 55.64	55.18	4 57 4.9	7.8	8.995	56.93	3 2.54	15 55.78	1 4.14	11 16 58.23
10	11 17 31.44	30.93	+ 4 34 15.9	19.2	8.989	-57.13	- 3 23.29	15 56.04	1 4.12	11 20 54.79
11	11 21 7.12	6.56	4 11 22.4	26.0	8.984	57.32	3 44.16	15 56.30	1 4.10	11 24 51.34
12	11 24 42.69	42.08	3 48 24.4	28.4	8.980	57.49	4 5.13	15 56.56	1 4.09	11 28 47.89
13	11 28 18.16	17.50	3 25 22.6	27.0	8.977	57.65	4 26.22	15 56.82	1 4.08	11 32 44.45
14	11 31 53.57	52.85	3 2 17.2	21.9	8.975	57.80	4 47.36	15 57.08	1 4.07	11 36 41.00
15	11 35 28.92	28.16	+ 2 39 8.4	13.5	8.973	-57.93	- 5 8.55	15 57.35	1 4.07	11 40 37.55
16	11 39 4.24	3.42	2 15 56.7	62.1	8.971	58.04	5 29.79	15 57.62	1 4.07	11 44 34.11
17	11 42 39.54	38.67	1 52 42.4	48.1	8.971	58.15	5 51.03	15 57.89	1 4.07	11 48 30.66
18	11 46 14.86	13.93	1 29 25.7	31.8	8.972	58.24	6 12.26	15 58.16	1 4.07	11 52 27.21
19	11 49 50.20	49.22	1 6 7.0	13.4	8.974	58.31	6 33.48	15 58.43	1 4.08	11 56 23.77
20	11 53 25.60	24.57	+ 0 42 46.5	53.3	8.977	-58.38	- 6 54.62	15 58.70	1 4.09	12 0 20.32
21	11 56 61.08	59.99	+ 0 19 24.8	31.8	8.980	58.43	7 15.69	15 58.97	1 4.10	12 4 16.87
22	12 0 36.66	35.52	- 0 3 58.0	50.7	8.985	58.47	7 36.65	15 59.24	1 4.12	12 8 13.43
23	12 4 12.36	11.17	0 27 21.6	13.9	8.991	58.49	7 57.49	15 59.51	1 4.14	12 12 9.94
24	12 7 48.22	46.97	0 50 45.7	37.6	8.998	58.50	8 18.19	15 59.78	1 4.17	12 16 6.53
25	12 11 24.25	22.94	- 1 14 9.9	1.4	9.006	-58.51	- 8 38.71	16 0.05	1 4.20	12 20 3.09
26	12 14 60.47	59.12	1 37 33.9	25.2	9.014	58.49	8 59.04	16 0.31	1 4.23	12 23 59.64
27	12 18 36.92	35.51	2 0 57.4	48.3	9.024	58.46	9 19.15	16 0.58	1 4.26	12 27 56.20
28	12 22 13.61	12.16	2 24 20.0	10.6	9.034	58.42	9 39.01	16 0.85	1 4.29	12 31 52.75
29	12 25 50.56	49.06	2 47 41.4	31.7	9.046	58.36	9 58.61	16 1.12	1 4.33	12 35 49.30
30	12 29 27.80	26.25	- 3 10 61.2	51.3	9.058	-58.28	-10 17.92	16 1.39	1 4.37	12 39 45.86
31	12 33 5.34	3.73	- 3 34 19.2	8.9	9.071	58.20	-10 36.92	16 1.66	1 4.41	12 43 42.41

NOTE. - For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Oct. 1	12 33 5.34	3.73	- 3 34 19.2	8.9	9.071	-38.20	-10 36.92	16 1.66	1 4.41	12 43 42.41
2	12 36 43.22	41.57	3 57 34.8	24.2	9.085	58.09	10 55.60	16 1.93	1 4.46	12 47 38.96
3	12 40 21.43	19.72	4 20 47.7	36.8	9.099	57.97	11 13.94	16 2.21	1 4.51	12 51 35.52
4	12 43 60.01	58.26	4 43 57.6	46.4	9.115	57.84	11 31.92	16 2.48	1 4.56	12 55 32.07
5	12 47 38.97	37.17	5 6 64.0	52.5	9.132	57.68	11 49.51	16 2.75	1 4.61	12 59 28.62
6	12 51 18.32	16.48	- 5 29 66.5	54.9	9.149	-57.51	-12 6.72	16 3.03	1 4.67	13 3 25.18
7	12 54 58.07	56.18	5 52 64.8	52.9	9.166	57.33	12 23.52	16 3.31	1 4.73	13 7 21.73
8	12 58 38.27	36.32	6 15 58.6	46.4	9.184	57.13	12 39.89	16 3.59	1 4.80	13 11 18.29
9	13 2 18.89	16.91	6 38 47.2	34.9	9.203	56.91	12 55.80	16 3.87	1 4.87	13 15 14.84
10	13 5 59.99	57.96	7 1 30.5	17.9	9.222	56.68	13 11.27	16 4.15	1 4.94	13 19 11.39
11	13 9 41.55	39.48	- 7 23 67.8	55.2	9.242	-56.42	-13 26.26	16 4.43	1 5.01	13 23 7.95
12	13 13 23.61	21.50	7 46 39.0	26.2	9.263	56.16	13 40.76	16 4.71	1 5.09	13 27 4.50
13	13 17 6.17	4.02	8 8 63.7	50.8	9.285	55.88	13 54.75	16 4.99	1 5.17	13 31 1.05
14	13 20 49.26	47.06	8 31 21.4	8.3	9.307	55.58	14 8.22	16 5.27	1 5.25	13 34 57.61
15	13 24 32.90	30.66	8 53 31.7	18.5	9.330	55.27	14 21.15	16 5.55	1 5.33	13 38 54.16
16	13 28 17.09	14.82	- 9 15 34.4	21.0	9.354	-54.94	-14 33.50	16 5.83	1 5.42	13 42 50.72
17	13 31 61.86	59.55	9 37 28.9	15.4	9.378	54.59	14 45.30	16 6.11	1 5.51	13 46 47.27
18	13 35 47.23	44.88	9 59 15.0	1.5	9.404	54.23	14 56.48	16 6.38	1 5.60	13 50 43.83
19	13 39 33.21	30.83	10 20 52.3	38.8	9.430	53.86	15 7.07	16 6.66	1 5.69	13 54 40.38
20	13 43 19.83	17.41	10 42 20.4	6.8	9.456	53.47	15 17.01	16 6.93	1 5.78	13 58 36.93
21	13 47 7.10	4.67	-11 3 39.1	25.4	9.484	-53.07	-15 26.29	16 7.20	1 5.88	14 2 33.49
22	13 50 55.05	52.58	11 24 47.7	34.1	9.512	52.65	15 34.91	16 7.46	1 5.98	14 6 30.04
23	13 54 43.69	41.19	11 45 46.0	32.4	9.541	52.21	15 42.83	16 7.73	1 6.08	14 10 26.60
24	13 58 33.05	30.52	12 6 33.8	20.1	9.572	51.76	15 50.03	16 7.99	1 6.18	14 14 23.15
25	14 2 23.13	20.57	12 26 70.4	56.8	9.603	51.29	15 56.52	16 8.24	1 6.28	14 18 19.71
26	14 6 13.95	11.37	-12 47 35.6	22.1	9.634	-50.80	-16 2.26	16 8.49	1 6.39	14 22 16.26
27	14 10 5.53	2.94	13 7 49.1	35.6	9.666	50.30	16 7.23	16 8.74	1 6.50	14 26 12.82
28	14 13 57.90	55.28	13 27 50.2	36.8	9.698	49.79	16 11.43	16 8.99	1 6.61	14 30 9.37
29	14 17 51.04	48.40	13 47 38.8	25.5	9.731	49.25	16 14.85	16 9.24	1 6.72	14 34 5.93
30	14 21 44.98	42.33	14 7 14.3	1.1	9.764	48.70	16 17.47	16 9.49	1 6.83	14 38 2.48
31	14 25 39.73	37.07	-14 26 36.2	23.2	9.798	-48.12	-16 19.29	16 9.73	1 6.94	14 41 59.04
Nov. 1	14 29 35.31	32.63	14 45 44.3	31.4	9.832	47.53	16 20.28	16 9.98	1 7.05	14 45 55.59
2	14 33 31.70	29.01	15 4 38.0	25.2	9.867	46.93	16 20.45	16 10.22	1 7.17	14 49 52.15
3	14 37 28.92	26.22	15 23 17.0	4.4	9.901	46.31	16 19.80	16 10.46	1 7.29	14 53 48.71
4	14 41 26.97	24.27	15 41 40.8	28.4	9.936	45.67	16 18.31	16 10.70	1 7.41	14 57 45.26
5	14 45 25.86	23.16	-15 59 49.0	36.8	9.971	-45.01	-16 15.99	16 10.94	1 7.52	15 1 41.82
6	14 49 25.58	22.88	16 17 41.0	29.0	10.005	44.33	16 12.84	16 11.18	1 7.64	15 5 38.37
7	14 53 26.14	23.44	16 35 16.6	4.8	10.040	43.63	16 8.85	16 11.41	1 7.76	15 9 34.93
8	14 57 27.54	24.84	16 52 35.3	23.9	10.075	42.92	16 4.02	16 11.65	1 7.88	15 13 31.49
9	15 1 29.76	27.07	17 9 36.7	25.6	10.110	42.19	15 58.35	16 11.88	1 8.00	15 17 28.04
10	15 5 32.83	30.15	17 26 20.5	9.6	10.145	-41.44	-15 51.85	16 12.11	1 8.12	15 21 24.60
11	15 9 36.72	34.06	17 42 46.0	35.4	10.179	40.68	15 44.52	16 12.34	1 8.24	15 25 21.15
12	15 13 41.45	38.79	17 58 53.1	42.8	10.214	39.90	15 36.35	16 12.57	1 8.36	15 29 17.71
13	15 17 47.01	44.36	18 14 41.3	31.2	10.248	39.11	15 27.37	16 12.79	1 8.48	15 33 14.27
14	15 21 53.38	50.76	18 30 10.1	0.4	10.283	38.29	15 17.55	16 13.01	1 8.59	15 37 10.83
15	15 25 60.59	58.00	18 45 19.4	10.0	10.317	-37.47	-15 6.90	16 13.22	1 8.71	15 41 7.38
16	15 30 8.62	6.04	18 59 68.6	59.6	10.351	-36.63	14 55.44	16 13.43	1 8.82	15 45 3.94

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Nov. 16	15 30 8.62	6.04	-18 59 68.6	59.6	10.351	-36.63	-14 55.44	16 13.43	1 8.82	15 45 3.94
17	15 34 17.47	14.92	19 14 37.5	28.8	10.385	35.77	14 43.16	16 13.64	1 8.94	15 49 0.49
18	15 38 27.13	24.61	19 28 45.7	37.2	10.419	34.90	14 30.05	16 13.84	1 9.05	15 52 57.05
19	15 42 37.62	35.13	19 42 32.6	24.6	10.453	34.02	14 16.14	16 14.04	1 9.16	15 56 53.61
20	15 46 48.90	46.45	19 55 58.2	50.4	10.487	33.11	14 1.42	16 14.23	1 9.27	16 0 50.17
21	15 50 60.98	58.57	-20 8 62.0	54.6	10.520	-32.19	-13 45.88	16 14.42	1 9.38	16 4 46.72
22	15 55 13.87	11.50	20 21 43.6	36.6	10.553	31.27	13 29.57	16 14.61	1 9.49	16 8 43.28
23	15 59 27.55	25.22	20 33 62.7	56.1	10.586	30.32	13 12.45	16 14.79	1 9.60	16 12 39.84
24	16 3 42.00	39.71	20 45 59.0	52.7	10.618	29.36	12 54.56	16 14.96	1 9.70	16 16 36.40
25	16 7 57.23	54.99	20 57 32.1	26.1	10.650	28.39	12 35.89	16 15.13	1 9.80	16 20 32.95
26	16 12 13.21	11.02	-21 8 41.7	36.1	10.681	-27.41	-12 16.47	16 15.29	1 9.90	16 24 29.51
27	16 16 29.92	27.80	21 19 27.5	22.2	10.711	26.40	11 56.31	16 15.45	1 10.00	16 28 26.07
28	16 20 47.37	45.29	21 29 49.1	44.1	10.741	25.39	11 35.43	16 15.60	1 10.10	16 32 22.63
29	16 25 5.52	3.50	21 39 46.1	41.5	10.770	24.37	11 13.84	16 15.75	1 10.19	16 36 19.19
30	16 29 24.36	22.40	21 49 18.5	14.3	10.799	23.33	10 51.56	16 15.90	1 10.27	16 40 15.74
Dec. 1	16 33 43.85	41.96	-21 58 25.7	21.9	10.826	-22.27	-10 28.62	16 16.05	1 10.36	16 44 12.30
2	16 38 3.98	2.16	22 7 7.6	4.0	10.851	21.21	10 5.04	16 16.19	1 10.44	16 48 8.86
3	16 42 24.73	22.97	22 15 23.6	20.4	10.876	20.14	9 40.85	16 16.33	1 10.52	16 52 5.42
4	16 46 46.04	44.36	22 23 13.8	10.9	10.900	19.04	9 16.09	16 16.47	1 10.59	16 56 1.98
5	16 51 7.92	6.30	22 30 37.9	35.3	10.922	17.94	8 50.77	16 16.60	1 10.66	16 59 58.53
6	16 55 30.31	28.78	-22 37 35.4	33.1	10.943	-16.84	-8 24.93	16 16.73	1 10.73	17 3 55.09
7	16 59 53.20	51.74	22 44 6.4	4.4	10.963	15.73	7 58.59	16 16.86	1 10.80	17 7 51.65
8	17 4 16.54	15.17	22 50 10.6	8.7	10.982	14.61	7 31.81	16 16.98	1 10.86	17 11 48.21
9	17 8 40.31	39.01	22 55 47.7	46.0	10.998	13.48	7 4.59	16 17.09	1 10.92	17 15 44.77
10	17 13 4.47	3.26	23 0 57.4	56.1	11.014	12.34	6 36.99	16 17.20	1 10.97	17 19 41.33
11	17 17 28.98	27.86	-23 5 39.9	38.8	11.029	-11.19	-6 9.02	16 17.31	1 11.02	17 23 37.89
12	17 21 53.84	52.79	23 9 54.8	53.9	11.041	10.04	5 40.72	16 17.42	1 11.07	17 27 34.45
13	17 26 18.98	18.02	23 13 42.1	41.4	11.052	8.89	5 12.13	16 17.52	1 11.11	17 31 31.00
14	17 30 44.38	43.52	23 17 1.6	1.0	11.063	7.73	4 43.26	16 17.62	1 11.15	17 35 27.56
15	17 35 10.03	9.25	23 19 53.2	52.8	11.073	6.57	4 14.17	16 17.71	1 11.18	17 39 24.12
16	17 39 35.87	35.20	-23 22 16.9	16.5	11.080	-5.40	-3 44.87	16 17.80	1 11.21	17 43 20.68
17	17 44 1.90	1.30	23 24 12.4	12.3	11.087	4.23	3 15.41	16 17.88	1 11.23	17 47 17.24
18	17 48 28.06	27.56	23 25 39.9	39.9	11.093	3.06	2 45.79	16 17.95	1 11.25	17 51 13.80
19	17 52 54.34	53.92	23 26 39.3	39.3	11.097	1.89	2 16.06	16 18.02	1 11.26	17 55 10.36
20	17 57 20.70	20.37	23 27 10.6	10.6	11.099	-0.71	1 46.26	16 18.08	1 11.27	17 59 6.92
21	18 1 47.12	46.88	-23 27 13.3	13.3	11.101	+0.47	-1 16.39	16 18.13	1 11.28	18 3 3.47
22	18 6 13.57	13.42	23 26 48.0	48.0	11.102	1.64	0 46.48	16 18.18	1 11.28	18 7 0.03
23	18 10 40.00	39.95	23 25 54.3	54.3	11.102	2.82	-0 16.60	16 18.22	1 11.27	18 10 56.59
24	18 15 6.39	6.43	23 24 32.4	32.4	11.098	4.00	+0 13.25	16 18.26	1 11.26	18 14 53.15
25	18 19 32.72	32.86	23 22 42.2	42.1	11.094	5.18	0 43.03	16 18.29	1 11.25	18 18 49.71
26	18 23 58.96	59.19	-23 20 23.8	23.7	11.090	+6.35	+1 12.72	16 18.31	1 11.23	18 22 46.27
27	18 28 25.06	25.38	23 17 37.4	37.1	11.084	7.52	1 42.27	16 18.33	1 11.20	18 26 42.83
28	18 32 50.99	51.39	23 14 22.8	22.5	11.076	8.69	2 11.65	16 18.34	1 11.17	18 30 39.39
29	18 37 16.72	17.22	23 10 40.2	39.7	11.067	9.86	2 40.84	16 18.35	1 11.14	18 34 35.94
30	18 41 42.22	42.81	23 6 29.7	29.2	11.057	11.02	3 9.79	16 18.36	1 11.11	18 38 32.50
31	18 46 7.47	8.13	-23 1 51.4	50.7	11.046	+12.18	+3 38.47	16 18.36	1 11.07	18 42 29.06
32	18 50 32.38	33.14	-22 56 45.5	44.6	11.032	+13.32	+4 6.85	16 18.36	1 11.02	18 46 25.62

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19 from the sidereal interval.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Jan. 1	13 26.36	2.417	8 11 59.87	155.83	+22 58 45.4	-644.5	73.55	16 13.7	59 27.1	II. S.
2	14 22.56	2.265	9 12 17.72	146.13	17 58 49.5	-844.6	71.33	16 17.9	59 42.6	II. S.
3	15 15.19	2.126	10 9 0.67	137.77	11 52 34.6	-974.9	69.25	16 19.0	59 46.4	II. S.
4	16 4.96	2.031	11 2 51.98	132.06	+5 7 50.3	-1038.0	67.80	16 17.1	59 39.6	II. S.
5	16 53.13	1.993	11 55 6.47	129.76	-1 49 44.6	-1040.4	67.24	16 13.1	59 24.7	II. S.
6	17 41.10	2.014	12 47 9.17	131.05	-8 37 10.5	-987.9	67.61	16 7.4	59 4.0	II. S.
7	18 30.23	2.088	13 40 21.52	135.47	-14 53 9.6	-883.4	68.77	16 0.8	58 39.6	II. S.
8	19 21.60	2.197	14 35 48.88	142.05	-20 17 4.1	-727.6	70.45	15 53.6	58 13.1	II. S.
9	20 15.75	2.313	15 34 3.55	149.03	-24 28 46.7	-523.2	72.16	15 46.0	57 45.1	II. S.
10	21 12.36	2.394	16 34 45.61	153.90	-27 10 28.8	-280.3	73.31	15 38.1	57 16.2	II. S.
11	22 10.08	2.402	17 36 35.25	154.37	-28 10 31.5	-19.4	73.35	15 30.0	56 46.4	II. N.
12	23 6.96	2.324	18 37 33.46	149.67	-27 27 21.7	+231.0	72.13	15 21.8	56 16.3	II. N.
14	0 1.12	2.182	19 35 48.42	141.12	-25 10 24.2	446.3	69.94	15 13.6	55 46.3	II. N.
15	0 51.48	2.014	20 30 14.99	131.05	-21 36 44.8	613.6	67.32	15 5.8	55 17.7	I. N. S.
16	1 37.89	1.858	21 20 44.01	121.62	-17 6 5.8	731.9	64.81	14 58.8	54 51.8	I. S.
17	2 20.90	1.733	22 7 47.99	114.13	-11 56 52.0	+807.7	62.76	14 52.9	54 30.3	I. S.
18	3 1.41	1.631	22 52 21.96	109.17	-6 24 31.4	848.9	61.43	14 48.8	54 15.0	I. S.
19	3 40.50	1.615	23 35 30.58	107.01	-0 41 34.5	861.6	60.82	14 46.7	54 7.6	I. S.
20	4 19.31	1.627	0 18 22.03	107.77	+5 1 31.3	849.8	61.15	14 47.2	54 9.4	I. S.
21	4 59.00	1.688	1 2 6.45	111.46	10 35 3.1	813.6	62.27	14 50.5	54 21.6	I. S.
22	5 40.76	1.799	1 47 55.23	118.11	+15 48 34.3	+748.8	64.18	14 56.8	54 44.7	I. S.
23	6 25.74	1.956	2 36 58.20	127.56	20 29 18.4	648.0	66.77	15 6.1	55 18.6	I. S.
24	7 14.93	2.147	3 30 14.36	139.02	24 20 49.6	501.0	69.76	15 18.0	56 2.4	I. S.
25	8 8.82	2.341	4 28 12.86	150.68	27 2 45.7	299.2	72.68	15 32.0	56 53.8	I. S.
26	9 6.94	2.491	5 30 26.44	159.73	28 13 1.1	+44.1	74.84	15 47.2	57 49.8	I. N.
27	10 7.67	2.552	6 35 16.61	163.37	+27 33 28.3	-245.0	75.66	16 2.4	58 45.5	I. N.
28	11 8.58	2.508	7 40 18.02	160.78	24 57 22.1	-531.8	74.97	16 16.0	59 35.3	I. N.
29	12 7.49	2.392	8 43 18.62	153.80	20 33 28.6	-778.1	73.23	16 26.4	60 13.7	I. N.
30	13 3.27	2.256	9 43 10.92	145.60	14 43 51.6	-957.4	71.19	16 32.6	60 36.4	II. S.
31	13 55.99	2.144	10 39 59.44	138.84	7 57 45.2	-1060.1	69.49	16 34.0	60 41.6	II. S.
Feb. 1	14 46.55	2.079	11 34 38.06	134.92	+0 45 47.0	-1087.7	68.53	16 30.8	60 29.7	II. S.
2	15 36.22	2.070	12 28 23.03	134.37	-6 23 19.1	-1047.1	68.45	16 23.7	60 3.7	II. S.
3	16 26.32	2.113	13 22 33.45	136.96	-13 3 50.5	-946.0	69.19	16 14.0	59 28.0	II. S.
4	17 17.95	2.194	14 18 16.33	141.89	-18 52 55.6	-791.0	70.51	16 2.7	58 46.7	II. S.
5	18 11.77	2.290	15 16 10.85	147.63	-23 30 24.2	-589.2	71.97	15 51.0	58 3.7	II. S.
6	19 7.69	2.363	16 16 11.79	152.03	-26 39 31.7	-351.6	73.06	15 39.7	57 22.1	II. S.
7	20 4.74	2.379	17 17 20.77	152.99	-28 9 16.5	-96.0	73.24	15 29.1	56 43.3	II. S.
8	21 1.28	2.320	18 17 59.31	149.46	-27 57 3.3	+154.1	72.28	15 19.6	56 8.4	II. N.
9	21 55.61	2.199	19 16 24.76	142.15	-26 9 42.9	376.4	70.35	15 11.2	55 37.5	II. N.
10	22 46.58	2.046	20 11 27.60	134.94	-23 1 30.8	557.1	67.89	15 3.8	55 10.4	II. N.
11	23 33.83	1.894	21 2 46.69	123.80	-18 50 12.8	+692.0	65.40	14 57.6	54 47.3	II. N.
13	0 17.68	1.766	21 50 41.74	116.11	-13 53 38.0	784.3	63.26	14 52.3	54 28.0	I. II. N.
14	0 58.89	1.675	22 35 57.44	110.60	-8 27 46.2	839.5	61.71	14 48.3	54 13.2	I. S.
15	1 38.39	1.624	23 19 30.45	107.58	-2 46 19.6	862.9	60.88	14 45.6	54 3.4	I. S.
16	2 17.20	1.617	0 2 21.99	107.16	+2 58 53.7	+858.8	60.81	14 44.6	53 59.7	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	"	"	s	"	"	
Feb. 16	2 17.20	1.617	0 2 21.99	107.16	+ 2 58 53.7	+ 858.8	60.81	14 44.6	53 59.7	I. S.
17	2 56.36	1.654	0 45 35.12	109.39	8 37 12.7	828.5	61.53	14 45.6	54 3.4	I. S.
18	3 36.96	1.736	1 30 13.78	114.28	13 58 0.2	770.7	63.00	14 48.9	54 15.4	I. S.
19	4 20.02	1.860	2 17 21.17	121.74	18 49 36.0	681.5	65.15	14 54.7	54 36.9	I. S.
20	5 6.50	2.019	3 7 54.48	131.32	22 58 8.9	554.2	67.79	15 3.3	55 8.5	I. S.
21	5 57.07	2.195	4 2 33.09	141.93	+26 6 57.0	+ 381.8	70.59	15 14.6	55 50.1	I. S.
22	6 51.75	2.356	5 1 19.64	151.59	27 57 4.7	+ 161.1	73.02	15 28.5	56 40.9	I. S.
23	7 49.69	2.466	6 3 22.44	157.89	28 10 20.3	- 100.3	74.54	15 44.2	57 38.7	I. N.
24	8 49.18	2.482	7 6 57.87	159.17	26 34 24.1	- 380.1	74.78	16 0.8	58 39.5	I. N.
25	9 48.19	2.435	8 10 5.01	155.78	23 7 56.7	- 647.2	73.87	16 16.8	59 38.2	I. N.
26	10 45.25	2.326	9 11 14.45	149.80	+18 2 28.8	- 870.6	72.33	16 30.3	60 28.0	I. N.
27	11 39.86	2.228	10 9 56.37	143.88	11 40 8.0	- 1028.9	70.79	16 39.9	61 3.3	I. N.
28	12 32.44	2.161	11 6 36.54	139.89	+ 4 29 36.0	- 1110.5	69.76	16 44.2	61 18.9	II. S.
29	13 24.00	2.144	12 2 15.16	138.84	- 2 57 39.8	- 1112.6	69.51	16 42.6	61 13.3	II. S.
Mar. 1	14 15.75	2.177	12 58 5.30	140.82	-10 10 17.7	- 1038.2	70.07	16 35.7	60 47.6	II. S.
2	15 8.81	2.250	13 55 13.86	145.20	-16 38 58.4	- 894.3	71.27	16 24.5	60 6.5	II. S.
3	16 3.87	2.339	14 54 23.15	150.57	-21 57 56.4	- 691.8	72.69	16 10.6	59 15.5	II. S.
4	17 0.92	2.409	15 55 32.11	154.78	-25 46 43.0	- 446.5	73.79	15 55.6	58 20.4	II. S.
5	17 59.05	2.423	16 57 45.81	155.64	-27 52 23.6	- 180.5	74.02	15 40.8	57 26.2	II. S.
6	18 56.63	2.363	17 59 26.77	152.01	-28 11 52.7	+ 80.1	73.10	15 27.2	56 36.4	II. N. S.
7	19 51.94	2.238	18 58 51.15	144.51	-26 52 8.8	+ 312.4	71.16	15 15.4	55 53.0	II. N.
8	20 43.79	2.080	19 54 47.25	135.01	-24 7 36.2	502.8	68.63	15 5.6	55 16.9	II. N.
9	21 31.80	1.923	20 46 52.09	125.53	-20 15 53.8	648.3	66.02	14 57.8	54 48.1	II. N.
10	22 16.27	1.789	21 35 24.38	117.48	-15 34 29.9	752.2	63.74	14 51.8	54 26.3	II. N.
11	22 57.94	1.691	22 21 8.02	111.56	-10 19 2.9	819.5	62.01	14 47.5	54 10.5	II. N.
12	23 37.73	1.632	23 4 58.50	108.07	- 4 43 6.7	+ 855.2	60.97	14 44.8	54 0.6	II. N.
14	0 16.63	1.616	23 47 55.14	107.07	+ 1 1 19.0	862.3	60.67	14 43.6	53 56.2	I. S.
15	0 55.63	1.641	0 30 57.86	108.57	6 43 4.3	841.8	61.12	14 43.9	53 57.1	I. S.
16	1 35.71	1.706	1 15 6.05	112.52	12 11 0.1	792.8	62.30	14 45.8	54 4.0	I. S.
17	2 17.84	1.810	2 1 17.07	118.76	17 13 11.2	712.5	64.12	14 49.4	54 17.2	I. S.
18	3 2.86	1.946	2 50 22.35	126.94	+21 36 13.4	+ 596.4	66.43	14 54.9	54 37.6	I. S.
19	3 51.39	2.099	3 42 58.61	136.16	25 4 52.2	439.9	68.96	15 2.7	55 6.1	I. S.
20	4 43.56	2.245	4 39 14.24	144.91	27 22 31.0	241.4	71.28	15 12.7	55 42.9	I. S.
21	5 38.82	2.351	5 38 35.65	151.31	28 13 5.9	+ 6.2	72.92	15 25.0	56 28.1	I. S.
22	6 35.90	2.393	6 39 45.83	153.82	27 24 29.8	- 251.2	73.55	15 39.3	57 20.5	I. N.
23	7 33.14	2.367	7 41 6.26	152.28	+24 52 11.6	- 508.2	73.13	15 54.9	58 17.8	I. N.
24	8 29.17	2.297	8 41 13.85	148.07	20 41 10.0	- 741.0	72.02	16 10.7	59 16.0	I. N.
25	9 23.34	2.219	9 39 29.82	143.34	15 5 17.7	- 929.5	70.74	16 25.4	60 9.8	I. N.
26	10 15.85	2.163	10 36 5.24	139.96	8 25 25.5	- 1058.9	69.81	16 37.1	60 53.1	I. N.
27	11 7.49	2.149	11 31 48.92	139.18	+ 1 7 34.8	- 1117.8	69.56	16 44.4	61 19.7	I. N.
28	11 59.42	2.187	12 27 49.99	141.43	- 6 18 27.3	- 1098.9	70.13	16 46.0	61 25.5	I. S.
29	12 52.83	2.270	13 25 19.97	146.46	-13 20 41.5	- 998.8	71.42	16 41.7	61 9.7	II. S.
30	13 48.62	2.380	14 25 12.79	153.04	-19 27 9.3	- 821.4	73.12	16 32.0	60 34.1	II. S.
31	14 46.98	2.478	15 27 40.67	158.93	-24 9 15.4	- 580.2	74.64	16 18.3	59 44.0	II. S.
32	15 47.10	2.519	16 31 54.05	161.40	-27 6 10.9	- 300.7	75.30	16 2.4	58 45.4	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Apr. 1	15 47.10	2.519	16 31 54.05	161.40	-27 6 10.9	-300.7	75.30	16 2.4	58 45.4	II. S.
2	16 47.17	2.472	17 36 4.89	158.60	-28 9 13.9	-16.8	74.68	15 45.9	57 45.0	II. S.
3	17 45.08	2.343	18 38 5.57	150.79	-27 23 19.5	+239.6	72.78	15 30.3	56 47.7	II. N.
4	18 39.24	2.167	19 36 20.53	140.22	-25 3 51.1	449.2	70.09	15 16.6	55 57.2	II. N.
5	19 29.05	1.986	20 30 13.73	129.36	-21 30 45.6	608.0	67.19	15 5.1	55 15.2	II. N.
6	20 14.78	1.831	21 20 1.72	119.99	-17 3 32.6	+721.1	64.58	14 56.3	54 42.6	II. N.
7	20 57.23	1.715	22 6 32.54	113.01	-11 58 53.3	796.5	62.55	14 50.0	54 19.4	II. N.
8	21 37.43	1.643	22 50 47.44	108.68	-6 30 29.7	840.6	61.24	14 46.0	54 4.7	II. N.
9	22 16.44	1.615	23 33 50.72	107.04	-0 50 0.6	857.4	60.70	14 44.1	53 57.9	II. N.
10	22 55.30	1.631	0 16 45.78	107.99	+4 51 54.9	847.8	60.92	14 44.0	53 57.7	II. N.
11	23 35.05	1.688	1 0 33.91	111.44	+10 24 28.9	+810.1	61.89	14 45.6	54 3.6	II. S.
13	0 16.65	1.784	1 46 13.25	117.21	15 35 51.6	741.1	63.52	14 48.7	54 14.9	I. S.
14	1 0.95	1.912	2 34 35.04	124.88	20 12 33.1	636.0	65.66	14 53.2	54 31.3	I. S.
15	1 48.56	2.057	3 26 15.91	133.60	23 59 11.4	490.3	68.03	14 59.0	54 52.8	I. S.
16	2 39.63	2.196	4 21 25.06	141.95	26 39 14.2	303.3	70.27	15 6.3	55 19.6	I. S.
17	3 33.65	2.298	5 19 31.83	148.09	+27 56 59.9	+80.5	71.92	15 15.2	55 52.1	I. S.
18	4 29.43	2.339	6 19 23.89	150.55	27 40 47.0	-163.5	72.59	15 25.6	56 30.2	I. N. S.
19	5 25.38	2.314	7 19 26.86	149.09	25 46 4.3	-408.3	72.26	15 37.4	57 13.6	I. N.
20	6 20.15	2.245	8 18 18.59	144.94	22 16 42.4	-633.8	71.22	15 50.3	58 1.0	I. N.
21	7 13.04	2.164	9 15 17.39	140.02	17 23 49.8	-823.8	69.94	16 3.7	58 50.1	I. N.
22	8 4.16	2.102	10 10 29.66	136.31	+11 23 41.2	-968.5	68.93	16 16.6	59 37.5	I. N.
23	8 54.26	2.081	11 4 40.34	135.07	+4 36 11.6	-1059.2	68.54	16 27.7	60 18.5	I. N.
24	9 44.48	2.113	11 58 58.40	136.98	-2 35 21.1	-1087.2	68.98	16 35.8	60 48.1	I. N.
25	10 36.13	2.199	12 54 42.30	142.18	-9 43 55.6	-1042.8	70.27	16 39.4	61 1.4	I. N.
26	11 30.40	2.328	13 53 3.93	149.94	-16 19 0.6	-919.0	72.21	16 37.9	60 56.0	I. S.
27	12 27.99	2.469	14 54 45.26	158.39	-21 48 26.9	-715.8	74.30	16 31.2	60 31.2	II. S.
28	13 28.60	2.571	15 59 28.68	164.55	-25 42 57.7	-448.4	75.83	16 20.0	59 50.0	II. S.
29	14 30.67	2.583	17 5 39.13	165.24	-27 42 56.2	-149.8	76.06	16 5.6	58 57.4	II. S.
30	15 31.68	2.485	18 10 46.83	159.37	-27 44 19.4	+137.7	74.71	15 49.8	57 59.2	II. S.
May 1	16 29.31	2.308	19 12 30.62	148.72	-25 58 51.9	380.4	72.13	15 34.0	57 1.3	II. N.
2	17 22.26	2.104	20 9 32.91	136.45	-22 47 53.1	+564.7	69.03	15 19.6	56 8.4	II. N.
3	18 10.45	1.917	21 1 48.60	125.18	-18 34 28.1	694.0	66.03	15 7.4	55 23.4	II. N.
4	18 54.60	1.770	21 50 1.29	116.35	-13 38 39.3	778.6	63.58	14 57.7	54 48.0	II. N.
5	19 35.80	1.672	22 35 16.72	110.44	-8 16 13.1	828.6	61.86	14 51.0	54 23.1	II. N.
6	20 15.25	1.623	23 18 46.42	107.52	-2 39 27.6	850.9	60.96	14 47.0	54 8.4	II. N.
7	20 54.10	1.623	0 1 40.88	107.48	+3 1 17.8	+848.7	60.88	14 45.6	54 3.3	II. N.
8	21 33.50	1.668	0 45 7.79	110.22	8 36 9.7	821.1	61.61	14 46.5	54 6.9	II. N.
9	22 14.51	1.756	1 30 11.28	115.49	13 54 21.9	764.5	63.05	14 49.5	54 17.7	II. N.
10	22 58.08	1.831	2 17 49.50	123.01	18 43 11.8	673.2	65.09	14 54.1	54 34.5	II. N. S.
11	23 44.97	2.029	3 8 47.06	131.93	22 47 28.9	540.9	67.46	15 0.0	54 56.2	II. S.
13	0 35.48	2.178	4 3 22.52	140.86	+25 50 3.0	+364.6	69.80	15 6.9	55 21.5	I. S.
14	1 29.23	2.293	5 1 12.70	147.81	27 33 44.1	+148.0	71.60	15 14.6	55 49.9	I. S.
15	2 25.02	2.345	6 1 6.36	150.91	27 45 1.0	-94.2	72.44	15 22.9	56 20.5	I. S.
16	3 21.17	2.323	7 1 20.86	149.58	26 17 57.6	-339.5	72.17	15 31.8	56 53.2	I. N.
17	4 16.05	2.244	8 0 19.20	144.90	+23 16 2.8	-565.1	71.05	15 41.2	57 27.5	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi- diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
May 17	4 16.05	2.244	8 0 19.20	144.90	+23 16 2.8	-565.1	71.05	15 41.2	57 27.5	I. N.
18	5 8.73	2.145	8 57 5.01	138.92	18 50 44.9	-754.5	69.56	15 50.8	58 3.0	I. N.
19	5 59.13	2.060	9 51 34.29	133.80	13 18 20.9	-899.7	68.25	16 0.5	58 38.6	I. N.
20	6 47.93	2.014	10 44 26.39	131.02	6 57 21.5	-997.0	67.50	16 9.7	59 12.4	I. N.
21	7 36.22	2.020	11 36 48.51	131.40	+ 0 7 37.5	-1042.6	67.56	16 17.8	59 42.0	I. N.
22	8 25.36	2.085	12 30 1.69	135.30	- 6 49 5.3	-1030.6	68.54	16 23.8	60 4.2	I. N.
23	9 16.73	2.204	13 25 28.70	142.46	-13 28 2.0	-952.2	70.33	16 26.9	60 15.7	I. N.
24	10 11.44	2.359	14 24 17.20	151.79	-19 21 2.2	-800.1	72.63	16 26.4	60 13.6	I. N.
25	11 9.94	2.510	15 26 53.07	160.88	-23 58 11.3	-574.3	74.83	16 21.8	59 56.6	I. S.
26	12 11.43	2.599	16 32 29.42	166.23	-26 52 55.2	-292.7	76.11	16 13.3	59 25.6	II. S.
27	13 13.80	2.578	17 38 57.94	164.93	-27 49 47.6	+ 7.6	75.83	16 1.8	58 43.2	II. S.
28	14 14.25	2.445	18 43 31.79	156.93	-26 50 14.3	282.8	73.94	15 48.3	57 53.7	II. S.
29	15 10.61	2.246	19 43 59.20	144.99	-24 11 1.3	502.9	71.02	15 34.2	57 2.1	II. N.
30	16 1.99	2.038	20 39 27.07	132.49	-20 16 21.2	660.3	67.85	15 20.8	56 12.7	II. N.
31	16 48.69	1.860	21 30 13.16	121.78	-15 30 4.6	762.9	65.01	15 9.0	55 29.2	II. N.
June 1	17 31.67	1.730	22 17 15.43	113.94	-10 11 45.2	+ 822.7	62.86	14 59.5	54 54.3	II. N.
2	18 12.14	1.652	23 1 46.93	109.22	- 4 36 13.7	850.2	61.51	14 52.6	54 29.2	II. N.
3	18 51.36	1.625	23 45 2.97	107.62	+ 1 5 4.6	852.3	61.03	14 48.8	54 15.0	II. N.
4	19 30.54	1.648	0 28 16.76	109.02	6 42 28.7	830.7	61.40	14 47.8	54 11.4	II. N.
5	20 10.85	1.719	1 12 38.59	113.27	12 6 19.5	783.8	62.56	14 49.6	54 17.9	II. N.
6	20 53.39	1.833	1 59 14.54	120.13	+17 5 31.2	+ 706.4	64.42	14 53.8	54 33.4	II. N.
7	21 39.10	1.981	2 49 1.45	129.03	21 26 23.1	591.0	66.77	15 0.0	54 56.4	II. N.
8	22 28.59	2.143	3 42 35.32	138.78	24 52 19.8	430.9	69.28	15 7.8	55 24.9	II. N. S.
9	23 21.81	2.286	4 39 53.91	147.38	27 5 2.5	+ 225.4	71.44	15 16.5	55 57.0	II. S.
11	0 17.85	2.371	5 40 1.75	152.53	27 47 51.6	- 15.7	72.72	15 25.7	56 30.6	I. S.
12	1 14.98	2.375	6 41 15.59	152.77	+26 50 42.3	- 270.0	72.80	15 34.7	57 3.6	I. S.
13	2 11.27	2.306	7 41 39.01	148.57	24 13 52.1	- 509.6	71.80	15 43.2	57 34.9	I. N.
14	3 5.32	2.196	8 39 47.46	141.95	20 8 0.3	- 712.2	70.19	15 50.9	58 3.4	I. N.
15	3 56.66	2.086	9 35 13.00	135.37	14 50 39.9	- 865.9	68.54	15 57.8	58 28.4	I. N.
16	4 45.71	2.008	10 28 20.33	130.68	8 42 12.9	- 967.6	67.34	16 3.6	58 49.8	I. N.
17	5 33.45	1.979	11 20 9.14	128.94	+ 2 3 26.3	-1017.6	66.91	16 8.4	59 7.4	I. N.
18	6 21.18	2.008	12 11 57.63	130.69	- 4 44 54.9	-1015.2	67.38	16 11.9	59 20.5	I. N.
19	7 10.31	2.095	13 5 10.03	135.90	-11 21 15.7	- 956.8	68.73	16 14.0	59 28.1	I. N.
20	8 2.13	2.230	14 1 4.16	144.00	-17 22 4.9	- 836.6	70.77	16 14.2	59 28.9	I. N.
21	8 57.51	2.386	15 0 32.56	153.39	-22 21 39.2	- 650.3	73.07	16 12.2	59 21.5	I. N.
22	9 56.44	2.516	16 3 34.55	161.24	-25 54 10.0	- 403.4	74.93	16 7.7	59 5.1	I. N.
23	10 57.63	2.566	17 8 52.48	164.21	-27 39 8.6	- 118.0	75.60	16 0.7	58 39.3	I. S.
24	11 58.68	2.503	18 14 2.12	160.46	-27 28 28.1	+ 168.0	74.68	15 51.5	58 5.5	I. II. S.
25	12 57.03	2.348	19 16 29.58	151.10	-25 29 48.9	416.6	72.40	15 40.7	57 25.9	II. S.
26	13 51.03	2.150	20 14 35.09	139.21	-22 3 1.8	606.8	69.42	15 29.2	56 43.7	II. N.
27	14 40.29	1.959	21 7 54.99	127.71	-17 32 27.9	+ 736.5	66.45	15 17.9	56 2.0	II. N.
28	15 25.36	1.804	21 57 3.08	118.41	-12 20 42.6	814.7	63.98	15 7.6	55 24.2	II. N.
29	16 7.29	1.698	22 43 2.29	112.04	- 6 45 59.3	853.1	62.24	14 59.1	54 52.9	II. N.
30	16 47.28	1.643	23 27 5.24	108.73	- 1 2 14.7	861.0	61.34	14 52.9	54 30.3	II. N.
31	17 26.57	1.639	0 10 25.57	108.47	+ 4 39 33.9	+ 844.0	61.29	14 49.5	54 17.7	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
July 1	17 26.57	1.639	0 10 25.57	108.47	+ 4 39 33.9	+ 844.0	61.29	14 49.5	54 17.7	II. N.
2	18 6.35	1.684	0 54 15.16	111.16	10 9 48.7	803.1	62.07	14 48.9	54 15.7	II. N.
3	18 47.76	1.775	1 39 43.49	116.66	15 18 35.2	735.9	63.61	14 51.4	54 24.7	II. N.
4	19 31.89	1.908	2 27 54.86	124.66	19 54 12.7	636.2	65.78	14 56.6	54 43.9	II. N.
5	20 19.58	2.069	3 19 40.68	134.34	23 42 11.7	496.4	68.30	15 4.4	55 12.4	II. N.
6	21 11.22	2.232	4 15 24.37	144.15	+26 25 12.9	+ 310.9	70.77	15 14.1	55 48.1	II. N.
7	22 6.43	2.359	5 14 42.30	151.77	27 45 4.5	+ 82.0	72.62	15 25.1	56 28.4	II. S.
8	23 3.86	2.413	6 16 14.19	155.02	27 27 2.6	- 174.8	73.38	15 36.5	57 10.3	II. S.
10	0 1.56	2.382	7 18 2.24	153.17	25 25 8.8	- 432.2	72.90	15 47.4	57 50.4	I. II. S.
11	0 57.69	2.288	8 18 15.83	147.52	21 45 5.6	- 661.2	71.50	15 57.0	58 25.5	I. N. S.
12	1 51.21	2.172	9 15 52.56	140.53	+16 42 47.5	- 841.0	69.76	16 4.6	58 53.6	I. N.
13	2 42.08	2.072	10 10 49.34	134.58	10 40 4.8	- 962.6	68.25	16 9.9	59 12.9	I. N.
14	3 31.00	2.013	11 3 49.20	130.97	+ 4 0 40.1	- 1024.6	67.37	16 12.8	59 23.6	I. N.
15	4 19.13	2.007	11 56 1.64	130.64	- 2 52 0.6	- 1029.2	67.34	16 13.5	59 26.3	I. N.
16	5 7.81	2.058	12 48 46.76	133.68	- 9 35 12.5	- 977.4	68.18	16 12.3	59 21.9	I. N.
17	5 58.33	2.159	13 43 22.70	139.76	-15 46 18.0	- 868.4	69.78	16 9.6	59 12.0	I. N.
18	6 51.70	2.292	14 40 50.53	147.75	-21 2 10.2	- 701.2	71.80	16 5.6	58 57.1	I. N.
19	7 48.31	2.421	15 41 32.91	155.52	-24 59 51.2	- 478.6	73.69	16 0.3	58 37.9	I. N.
20	8 47.50	2.499	16 44 50.73	160.19	-27 19 29.7	- 214.5	74.77	15 54.0	58 14.7	I. N.
21	9 47.53	2.486	17 48 58.48	159.43	-27 49 31.8	+ 63.8	74.52	15 46.7	57 47.7	I. S.
22	10 46.07	2.379	18 51 37.36	152.97	-26 31 5.8	+ 322.4	72.88	15 38.4	57 17.3	I. S.
23	11 41.22	2.211	19 50 52.10	142.88	-23 37 48.8	534.9	70.31	15 29.4	56 44.3	I. S.
24	12 32.09	2.029	20 45 49.33	131.92	-19 30 46.1	690.7	67.47	15 20.2	56 10.4	II. N. S.
25	13 18.78	1.868	21 36 34.60	122.22	-14 32 27.4	792.4	64.88	15 11.2	55 37.3	II. N.
26	14 2.05	1.746	22 23 54.63	114.89	- 9 2 54.2	848.5	62.90	15 2.9	55 7.1	II. N.
27	14 42.95	1.670	23 8 51.94	110.36	- 3 18 26.5	+ 868.3	61.67	14 56.0	54 41.6	II. N.
28	15 22.61	1.643	23 52 34.69	108.68	+ 2 27 54.6	858.9	61.25	14 51.0	54 23.2	II. N.
29	16 2.17	1.662	0 36 11.17	109.82	8 5 18.2	823.9	61.64	14 48.3	54 13.3	II. N.
30	16 42.73	1.726	1 20 48.26	113.71	13 23 43.1	763.8	62.80	14 48.3	54 13.2	II. N.
31	17 25.37	1.833	2 7 29.93	120.16	18 12 33.5	675.3	64.63	14 51.2	54 23.8	II. N.
Aug. 1	18 11.02	1.975	2 57 12.83	128.69	+22 19 26.2	+ 552.8	66.96	14 57.0	54 45.4	II. N.
2	19 0.32	2.135	3 50 35.94	138.29	25 29 27.5	390.1	69.46	15 5.7	55 17.2	II. N.
3	19 53.38	2.279	4 47 44.68	146.99	27 25 44.6	+ 184.3	71.68	15 16.9	55 58.2	II. N.
4	20 49.47	2.381	5 47 55.41	153.09	27 51 57.3	- 58.2	73.10	15 29.8	56 45.8	II. S.
5	21 47.05	2.405	6 49 36.64	154.54	26 36 47.3	- 318.5	73.39	15 43.6	57 36.6	II. S.
6	22 44.30	2.355	7 50 57.45	151.56	+23 38 26.4	- 569.2	72.59	15 57.2	58 26.4	II. S.
7	23 39.76	2.262	8 50 30.64	145.95	19 6 17.2	- 783.5	71.15	16 9.2	59 10.4	II. S.
9	0 32.84	2.164	9 47 40.94	140.04	13 18 57.1	- 942.9	69.64	16 18.4	59 44.3	I. N.
10	1 23.83	2.092	10 42 45.46	135.72	+ 6 40 35.0	- 1037.8	68.55	16 24.1	60 5.1	I. N.
11	2 13.63	2.066	11 36 37.68	134.14	- 0 22 25.4	- 1066.0	68.17	16 25.9	60 11.7	I. N.
12	3 3.41	2.091	12 30 29.15	135.68	- 7 23 28.4	- 1028.4	68.64	16 24.0	60 4.8	I. N.
13	3 54.41	2.166	13 25 34.12	140.17	-13 56 40.4	- 927.1	69.87	16 19.0	59 46.5	I. N.
14	4 47.65	2.275	14 22 54.10	146.71	-19 37 11.5	- 765.7	71.58	16 11.8	59 20.0	I. N.
15	5 43.63	2.388	15 22 58.70	153.51	-24 1 58.9	- 550.1	73.31	16 3.2	58 48.4	I. N.
16	6 41.97	2.464	16 25 25.17	158.09	- 26 51 49.1	- 294.0	74.42	15 53.9	58 14.3	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Zenith. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limb.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Aug. 16	6 41.97	2.464	16 25 25.17	158.09	-26 51 49.1	-294.0	74.42	15 53.9	58 14.3	I. N.
17	7 41.29	2.465	17 28 50.62	158.15	-27 54 57.9	-21.3	74.39	15 44.5	57 39.9	I. N. S.
18	8 39.59	2.380	18 31 14.75	153.05	-27 10 34.3	+238.7	73.07	15 35.3	57 5.8	I. S.
19	9 35.03	2.233	19 30 46.86	144.19	-24 49 1.8	461.1	70.77	15 26.4	56 33.2	I. S.
20	10 26.57	2.062	20 26 24.46	133.93	-21 8 22.6	633.3	68.05	15 17.9	56 2.1	I. S.
21	11 14.11	1.903	21 18 0.92	124.38	-16 29 17.6	+753.9	65.46	15 10.0	55 33.2	I. S.
22	11 58.19	1.777	22 6 9.72	116.76	-11 11 24.5	828.5	63.34	15 2.8	55 6.7	I. II. N. S.
23	12 39.73	1.691	22 51 45.11	111.62	-5 31 42.7	864.2	61.91	14 56.5	54 43.4	II. N.
24	13 19.74	1.650	23 35 48.94	109.13	+0 15 32.6	867.1	61.22	14 51.3	54 24.4	II. N.
25	13 59.27	1.652	0 19 24.19	109.24	5 58 12.3	841.7	61.31	14 47.7	54 11.1	II. N.
26	14 39.36	1.696	1 3 32.63	111.88	+11 25 18.1	+789.4	62.13	14 46.0	54 4.7	II. N.
27	15 20.98	1.779	1 49 13.39	116.90	16 26 2.3	709.5	63.62	14 46.5	54 6.7	II. N.
28	16 5.03	1.897	2 37 20.14	123.97	20 48 49.1	598.9	65.63	14 49.6	54 18.1	II. N.
29	16 52.20	2.036	3 28 34.41	132.36	24 20 32.5	453.5	67.93	14 55.5	54 39.8	II. N.
30	17 42.78	2.177	4 23 14.24	140.83	26 46 33.5	270.3	70.17	15 4.3	55 12.1	II. N.
31	18 36.48	2.290	5 21 1.22	147.65	+27 51 54.5	+51.1	71.89	15 15.8	55 54.3	II. N.
Sept. 1	19 32.28	2.349	6 20 55.04	151.20	27 24 4.4	-193.2	72.74	15 29.6	56 45.2	II. S.
2	20 28.72	2.344	7 21 27.13	150.86	25 16 36.2	-443.3	72.59	15 45.0	57 41.7	II. S.
3	21 24.37	2.288	8 21 12.01	147.51	21 31 46.5	-676.1	71.68	16 0.8	58 39.6	II. S.
4	22 18.38	2.213	9 19 18.23	142.98	16 20 55.4	-870.2	70.46	16 15.5	59 33.5	II. S.
5	23 10.68	2.150	10 15 41.09	139.18	+10 2 56.7	-1009.4	69.45	16 27.5	60 17.7	II. S.
7	0 1.85	2.122	11 10 56.24	137.52	+3 2 8.5	-1082.9	69.00	16 35.5	60 47.0	I. II. N.
8	0 52.90	2.141	12 6 4.65	138.69	-4 13 39.7	-1083.7	69.32	16 38.5	60 58.0	I. N.
9	1 45.02	2.209	13 2 16.48	142.75	-11 14 46.9	-1009.3	70.41	16 36.3	60 50.1	I. N.
10	2 39.22	2.312	14 0 33.99	148.96	-17 31 21.6	-861.8	72.05	16 29.6	60 25.3	I. N.
11	3 36.07	2.423	15 1 30.79	155.64	-22 35 29.3	-649.1	73.77	16 19.3	59 47.7	I. N.
12	4 35.27	2.501	16 4 49.14	160.31	-26 4 12.8	-388.6	74.97	16 7.0	59 2.5	I. N.
13	5 35.50	2.504	17 9 9.86	160.53	-27 43 30.8	-107.3	75.05	15 53.9	58 14.4	I. N.
14	6 34.77	2.420	18 12 32.10	155.48	-27 31 29.7	+162.9	73.80	15 41.1	57 27.1	I. S.
15	7 31.16	2.270	19 13 1.07	146.46	-25 38 13.8	395.7	71.50	15 29.2	56 43.4	I. S.
16	8 23.55	2.095	20 9 29.66	135.88	-22 21 38.8	+578.5	68.72	15 18.6	56 4.6	I. S.
17	9 11.78	1.929	21 1 48.14	125.91	-18 2 11.5	710.6	65.99	15 9.5	55 31.1	I. S.
18	9 56.39	1.795	21 50 28.73	117.87	-12 59 5.6	797.8	63.72	15 1.8	55 2.9	I. S.
19	10 38.28	1.702	22 36 25.23	112.28	-7 28 59.9	846.7	62.08	14 55.5	54 39.8	I. S.
20	11 18.45	1.653	23 20 38.90	109.29	-1 46 1.9	862.9	61.20	14 50.5	54 21.6	I. S.
21	11 57.94	1.645	0 4 11.43	108.84	+3 57 26.5	+849.7	61.06	14 46.9	54 8.3	I. II. N.
22	12 37.74	1.678	0 48 2.37	110.82	9 29 58.7	808.4	61.64	14 44.7	54 0.2	II. N.
23	13 18.77	1.747	1 33 7.67	114.99	14 40 16.6	738.3	62.88	14 44.1	53 58.0	II. N.
24	14 1.87	1.849	2 20 17.25	121.08	19 16 29.9	637.5	64.63	14 45.3	54 2.4	II. N.
25	14 47.68	1.971	3 10 9.93	128.45	23 5 52.1	503.6	66.70	14 48.6	54 14.4	II. N.
26	15 36.52	2.097	4 3 4.63	136.03	+25 54 44.9	+335.1	68.78	14 54.2	54 35.1	II. N.
27	16 28.20	2.204	4 58 50.47	142.46	27 29 34.9	+134.3	70.50	15 2.4	55 5.1	II. N.
28	17 21.06	2.268	5 56 41.75	146.30	27 38 51.0	-90.0	71.52	15 13.2	55 44.6	II. N.
29	18 16.62	2.278	6 55 26.77	146.91	26 15 32.5	-325.9	71.67	15 26.4	56 33.1	II. S.
30	19 10.94	2.242	7 53 51.35	144.77	+23 19 7.2	-553.5	71.10	15 41.5	57 28.7	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Oct.	1 20 4.08	2.184	8 61 4.97	141.29	+18 55 56.3	- 757.2	70.15	15 57.8	58 28.5	II. S.
	2 20 55.85	2.133	9 46 56.10	138.16	13 18 30.2	- 922.5	69.28	16 13.9	59 27.7	II. S.
	3 21 46.68	2.110	10 41 51.25	136.82	+ 6 44 36.6	1037.4	68.86	16 28.2	60 20.2	II. S.
	4 22 37.50	2.133	11 36 45.30	138.19	- 0 23 4.8	- 1089.5	69.16	16 39.0	61 0.1	II. S.
	5 23 29.47	2.206	12 32 48.37	142.58	- 7 37 9.5	- 1067.6	70.27	16 44.9	61 21.6	II. N.
	7 0 23.75	2.323	13 31 10.49	149.62	- 14 26 12.0	- 963.4	72.06	16 44.9	61 21.7	I. N.
	8 1 21.14	2.460	14 32 40.00	157.84	- 20 16 52.8	- 776.7	74.13	16 39.2	61 0.5	I. N.
	9 2 21.61	2.571	15 37 14.96	164.54	- 24 38 12.8	- 520.3	75.81	16 28.5	60 21.4	I. N.
	10 3 23.93	2.605	16 43 40.68	166.60	- 27 7 46.6	- 224.1	76.38	16 14.5	59 30.0	I. N.
	11 4 25.82	2.534	17 49 40.53	162.32	- 27 37 41.8	+ 70.9	75.41	15 58.9	58 32.8	I. N.
	12 5 24.87	2.376	18 52 50.07	152.80	- 26 16 8.5	+ 328.4	73.11	15 43.3	57 35.5	I. S.
	13 6 19.54	2.178	19 51 36.09	140.89	- 23 22 30.6	529.9	70.10	15 28.8	56 42.2	I. S.
	14 7 9.48	1.987	20 45 36.81	129.40	- 19 19 51.6	674.4	67.05	15 16.2	55 55.7	I. S.
	15 7 55.20	1.831	21 35 24.47	119.99	- 14 29 29.4	770.2	64.44	15 5.6	55 17.0	I. S.
	16 8 37.71	1.720	22 21 58.43	113.32	- 9 8 56.4	826.7	62.50	14 57.4	54 46.6	I. S.
	17 9 18.13	1.656	23 6 26.58	109.50	- 3 32 19.1	+ 851.4	61.34	14 51.2	54 24.0	I. S.
	18 9 57.57	1.638	23 49 56.04	108.41	+ 2 8 30.2	848.1	60.96	14 47.0	54 8.6	I. S.
	19 10 37.09	1.662	0 33 30.27	109.86	7 42 37.7	818.0	61.33	14 44.6	53 59.6	I. S.
	20 11 17.66	1.725	1 18 7.76	113.63	12 59 5.4	759.5	62.37	14 43.8	53 56.7	I. N.
	21 12 0.14	1.820	2 4 40.15	119.36	17 46 4.5	670.0	63.97	14 44.4	53 59.1	II. N.
	22 12 45.19	1.957	2 53 47.41	126.40	+ 21 50 35.5	+ 546.7	65.91	14 46.6	54 7.1	II. N.
	23 13 33.16	2.059	3 45 49.69	133.72	24 58 42.5	388.1	67.92	14 50.4	54 21.0	II. N.
	24 14 23.87	2.163	4 40 37.50	140.00	26 56 41.9	+ 197.0	69.60	14 55.9	54 41.1	II. N.
	25 15 16.60	2.224	5 37 26.54	143.65	27 33 6.0	- 17.9	70.62	15 3.2	55 8.0	II. N.
	26 16 10.18	2.232	6 35 6.25	144.13	26 41 8.6	- 242.1	70.81	15 12.5	55 42.4	II. S.
	27 17 3.35	2.193	7 32 21.78	141.79	+ 24 20 17.3	- 459.7	70.27	15 23.9	56 24.2	II. S.
	28 17 55.24	2.130	8 28 20.42	137.99	20 36 8.1	- 656.6	69.30	15 37.1	57 12.6	II. S.
	29 18 45.60	2.070	9 22 46.98	134.39	15 39 2.1	- 823.0	68.35	15 51.6	58 6.0	II. S.
	30 19 34.82	2.037	10 16 4.42	132.44	9 42 45.0	- 951.4	67.79	16 6.7	59 1.3	II. S.
	31 20 23.76	2.049	11 9 5.49	133.16	+ 3 4 5.5	- 1033.4	67.92	16 21.0	59 54.0	II. S.
Nov.	1 21 13.62	2.116	12 3 2.25	137.14	- 3 56 18.5	- 1057.9	68.89	16 33.1	60 38.4	II. S.
	2 22 5.75	2.237	12 59 14.81	144.43	- 10 52 50.9	- 1011.7	70.71	16 41.4	61 8.7	II. S.
	3 23 1.32	2.399	13 58 55.10	154.20	- 17 14 31.9	- 882.1	73.12	16 44.5	61 20.0	II. N.
	5 0 0.95	2.566	15 2 39.11	164.23	- 22 26 54.0	- 665.9	75.55	16 41.7	61 9.8	I. N.
	6 1 4.03	2.675	16 9 50.58	170.82	- 25 57 46.6	- 379.4	77.15	16 33.3	60 39.0	I. N.
	7 2 8.44	2.671	17 18 22.71	170.54	- 27 26 26.1	- 63.2	77.14	16 20.5	59 52.0	I. N.
	8 3 11.21	2.542	18 25 15.63	162.78	- 26 51 5.2	+ 232.6	75.36	16 4.9	58 54.8	I. N. S.
	9 4 9.82	2.334	19 27 57.98	150.30	- 24 28 7.1	471.1	72.36	15 48.4	57 54.0	I. S.
	10 5 3.14	2.111	20 25 22.74	136.89	- 20 43 19.9	641.8	68.99	15 32.4	56 55.5	I. S.
	11 5 51.40	1.917	21 17 42.96	125.22	- 16 2 40.1	752.5	65.91	15 18.2	56 3.1	I. S.
	12 6 35.58	1.773	22 5 57.44	116.51	- 10 47 29.8	+ 816.6	63.49	15 6.2	55 19.2	I. S.
	13 7 16.92	1.681	22 51 21.34	111.02	- 5 13 59.9	845.8	61.90	14 57.0	54 45.2	I. S.
	14 7 56.69	1.641	23 35 10.83	108.61	+ 0 25 26.3	847.1	61.15	14 50.4	54 21.0	I. S.
	15 8 36.09	1.649	0 18 37.66	109.08	6 0 26.5	823.7	61.22	14 46.4	54 6.4	I. S.
	16 9 16.21	1.701	1 2 47.87	112.18	+ 11 21 3.9	+ 774.9	62.04	14 44.8	54 0.3	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi- diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Nov. 17	9 58.03	1.790	1 48 40.54	117.55	+16 16 31.8	+ 697.3	63.48	14 45.2	54 1.8	I. S.
18	10 42.36	1.907	2 37 3.97	124.61	20 34 28.5	586.5	65.37	14 47.3	54 9.7	I. N. S.
19	11 29.68	2.036	3 28 27.54	132.35	24 0 51.8	439.1	67.41	14 50.9	54 23.0	I. N.
20	12 19.08	2.151	4 22 50.47	139.28	26 20 59.5	255.8	69.22	14 55.8	54 40.9	II. N.
21	13 12.60	2.225	5 19 33.10	143.74	27 21 47.0	+ 44.5	70.40	15 1.9	55 3.1	II. N.
22	14 6.31	2.240	6 17 21.11	144.63	+26 54 50.8	- 179.7	70.69	15 8.9	55 29.2	II. N.
23	14 59.67	2.198	7 14 47.85	142.10	24 58 49.1	- 397.9	70.12	15 17.2	55 59.3	II. S.
24	15 51.54	2.121	8 10 45.17	137.47	21 39 32.9	- 593.6	68.99	15 26.4	56 33.4	II. S.
25	16 41.45	2.039	9 4 44.33	132.56	17 8 11.5	- 757.1	67.76	15 36.8	57 11.4	II. S.
26	17 29.62	1.980	9 56 58.94	128.99	11 38 46.4	- 883.4	66.84	15 48.0	57 52.7	II. S.
27	18 16.83	1.962	10 48 16.08	127.93	+ 5 26 45.7	- 969.6	66.56	15 59.8	58 35.9	II. S.
28	19 4.24	1.998	11 39 45.21	130.08	- 1 10 55.2	- 1010.7	67.11	16 11.3	59 18.3	II. S.
29	19 53.22	2.093	12 32 48.57	135.80	- 7 54 41.8	- 998.2	68.57	16 21.7	59 56.4	II. S.
30	20 45.18	2.245	13 28 50.90	144.90	-14 20 41.6	- 919.5	70.84	16 29.7	60 25.8	II. S.
Dec. 1	21 41.25	2.432	14 29 1.24	156.15	-19 59 52.3	- 762.4	73.59	16 34.1	60 42.0	II. S.
2	22 41.80	2.607	15 33 40.69	166.70	-24 19 45.2	- 524.1	76.09	16 33.9	60 41.3	II. N. S.
3	23 45.74	2.702	16 41 44.21	172.44	-26 50 49.4	- 224.0	77.42	16 28.8	60 22.6	I. II. N.
5	0 50.44	2.665	17 50 33.11	170.22	-27 16 39.8	+ 93.0	76.92	16 19.2	59 47.2	I. N.
6	1 52.68	2.505	18 56 54.33	160.56	-25 41 10.5	374.9	74.66	16 6.1	58 59.1	I. N. S.
7	2 50.16	2.281	19 58 29.41	147.09	-22 25 45.4	589.7	71.40	15 51.2	58 4.2	I. S.
8	3 42.19	2.058	20 54 35.82	133.70	-17 59 1.6	+ 732.5	68.03	15 35.8	57 7.9	I. S.
9	4 29.29	1.876	21 45 46.58	122.71	-12 47 40.7	815.3	65.14	15 21.4	56 14.9	I. S.
10	5 12.65	1.747	22 33 11.68	114.96	- 7 12 42.1	853.2	63.03	15 8.9	55 29.0	I. S.
11	5 53.59	1.674	23 18 11.38	110.57	- 1 29 29.8	858.1	61.79	14 58.9	54 52.4	I. S.
12	6 33.42	1.654	0 2 4.12	109.34	+ 4 10 22.8	837.3	61.43	14 51.9	54 26.5	I. S.
13	7 13.35	1.682	0 46 3.13	111.04	+ 9 37 13.7	+ 793.0	61.88	14 47.7	54 11.3	I. S.
14	7 54.50	1.754	1 31 15.46	115.39	14 41 28.2	723.7	63.06	14 46.5	54 6.7	I. S.
15	8 37.84	1.863	2 18 39.76	121.94	19 12 19.0	625.2	64.80	14 47.8	54 11.6	I. S.
16	9 24.11	1.995	3 8 59.85	129.86	22 56 58.9	492.0	66.86	14 51.4	54 24.9	I. S.
17	10 13.59	2.127	4 2 33.65	137.81	25 40 53.7	321.3	68.88	14 56.9	54 44.8	I. N. S.
18	11 5.95	2.229	4 59 0.22	143.95	+27 9 25.4	+ 116.3	70.41	15 3.6	55 9.6	I. N.
19	12 0.11	2.273	5 57 15.27	146.64	27 11 1.7	- 110.4	71.08	15 11.3	55 37.7	I. II. N.
20	12 54.53	2.251	6 55 46.11	145.29	25 40 52.0	- 338.9	70.75	15 19.4	56 7.4	II. N.
21	13 47.74	2.177	7 53 3.99	140.81	22 42 36.9	- 547.7	69.66	15 27.6	56 37.6	II. S.
22	14 38.85	2.081	8 48 15.15	135.07	18 27 22.2	- 721.8	68.23	15 35.7	57 7.5	II. S.
23	15 27.72	1.996	9 41 12.46	129.95	+13 10 44.5	- 853.9	66.95	15 43.7	57 36.9	II. S.
24	16 14.93	1.945	10 32 29.09	126.87	7 10 6.4	- 941.8	66.18	15 51.5	58 5.4	II. S.
25	17 1.47	1.942	11 23 5.56	126.72	+ 0 43 16.6	- 984.7	66.18	15 59.0	58 32.9	II. S.
26	17 48.61	1.996	12 14 18.37	129.94	- 5 51 21.0	- 980.0	67.07	16 6.0	58 58.6	II. S.
27	18 37.74	2.107	13 7 30.69	136.64	-12 13 39.6	- 921.8	68.83	16 12.1	59 21.0	II. S.
28	19 30.15	2.267	14 4 0.86	146.26	-18 0 27.7	- 800.9	71.25	16 16.8	59 38.3	II. S.
29	20 26.73	2.447	15 4 41.48	157.10	-22 45 2.9	- 610.0	73.89	16 19.3	59 47.7	II. S.
30	21 27.38	2.595	16 9 26.69	166.01	- 25 59 32.3	352.6	75.97	16 19.1	59 47.0	II. S.
31	22 30.55	2.649	17 16 44.19	169.24	-27 21 24.2	- 53.0	76.67	16 15.6	59 34.0	II. N.
32	23 33.51	2.577	18 23 48.72	164.90	- 26 42 7.3	+ 245.1	75.61	16 8.8	59 9.0	II. N.

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	"		h m	h m s	° ' "	"	"	"
Jan. 0	0 32.4	19 11 57.15	24 31 51.4	6.4	2.4	0.18	Feb. 14	23 15.2	20 55 58.94	13 57 0.6	13.2	5.0	0.34
1	0 35.6	19 19 5.56	24 20 31.6	6.4	2.4	0.18	15	23 9.0	20 53 40.86	14 17 1.2	13.0	4.9	0.33
2	0 38.8	19 26 13.49	24 7 37.0	6.5	2.4	0.18	16	23 3.3	20 51 53.49	14 35 48.5	12.8	4.8	0.33
3	0 41.9	19 33 20.63	23 53 7.7	6.5	2.4	0.18	17	22 58.0	20 50 36.89	14 53 12.4	12.6	4.8	0.33
4	0 45.1	19 40 26.67	23 37 3.5	6.6	2.5	0.18	18	22 53.3	20 49 50.57	15 9 5.9	12.4	4.7	0.32
5	0 48.2	19 47 31.28	23 19 24.0	6.6	2.5	0.18	19	22 49.1	20 49 33.60	15 23 24.0	12.2	4.6	0.32
6	0 51.3	19 54 34.07	23 0 9.7	6.7	2.5	0.18	20	22 45.4	20 49 44.73	15 36 3.8	12.0	4.5	0.31
7	0 54.3	20 1 34.58	22 39 21.2	6.7	2.6	0.18	21	22 42.1	20 50 22.58	15 47 3.0	11.8	4.4	0.31
8	0 57.3	20 8 32.33	22 16 59.3	6.8	2.6	0.18	22	22 39.2	20 51 25.57	15 56 20.7	11.6	4.4	0.30
9	1 0.3	20 15 26.76	21 53 5.6	6.9	2.6	0.19	23	22 36.8	20 52 52.07	16 3 56.9	11.4	4.3	0.30
10	1 3.2	20 22 17.25	21 27 41.9	7.0	2.7	0.19	24	22 34.7	20 54 40.50	16 9 51.7	11.1	4.2	0.29
11	1 6.0	20 29 3.09	21 0 50.6	7.1	2.7	0.19	25	22 32.9	20 56 49.30	16 14 6.1	10.9	4.1	0.29
12	1 8.8	20 35 43.48	20 32 35.1	7.2	2.7	0.19	26	22 31.4	20 59 16.97	16 16 41.1	10.7	4.0	0.28
13	1 11.4	20 42 17.49	20 2 59.4	7.4	2.8	0.19	27	22 30.2	21 2 2.04	16 17 37.6	10.5	4.0	0.28
14	1 13.8	20 48 44.12	19 32 8.2	7.5	2.8	0.20	28	22 29.2	21 5 3.18	16 16 56.9	10.3	3.9	0.27
15	1 16.2	20 55 2.17	19 0 7.7	7.6	2.9	0.20	29	22 28.5	21 8 19.10	16 14 40.1	10.1	3.8	0.27
16	1 18.4	21 1 10.32	18 27 5.4	7.7	2.9	0.20	Mar. 1	22 28.1	21 11 48.63	16 10 48.6	9.9	3.7	0.26
17	1 20.4	21 7 7.06	17 53 10.2	7.9	3.0	0.21	2	22 27.9	21 15 30.72	16 5 23.7	9.8	3.7	0.26
18	1 22.2	21 12 50.73	17 18 32.2	8.0	3.0	0.21	3	22 27.9	21 19 24.34	15 58 26.4	9.6	3.6	0.25
19	1 23.7	21 18 19.43	16 43 23.9	8.2	3.1	0.21	4	22 28.0	21 23 28.57	15 49 58.1	9.4	3.6	0.25
20	1 25.0	21 23 31.09	16 7 59.2	8.4	3.1	0.22	5	22 28.3	21 27 42.58	15 40 0.0	9.3	3.5	0.24
21	1 25.9	21 28 23.44	15 32 34.3	8.6	3.2	0.22	6	22 28.7	21 32 5.60	15 28 33.4	9.1	3.5	0.24
22	1 26.4	21 32 53.98	14 57 27.6	8.9	3.3	0.23	7	22 29.3	21 36 36.92	15 15 39.3	9.0	3.4	0.23
23	1 26.6	21 37 0.05	14 22 59.6	9.1	3.4	0.23	8	22 30.0	21 41 15.93	15 1 18.7	8.8	3.4	0.23
24	1 26.3	21 40 38.91	13 49 32.4	9.4	3.5	0.24	9	22 30.8	21 46 2.06	14 45 32.9	8.7	3.3	0.22
25	1 25.5	21 43 47.66	13 17 30.3	9.6	3.6	0.24	10	22 31.7	21 50 54.77	14 28 22.7	8.6	3.3	0.22
26	1 24.2	21 46 23.51	12 47 18.6	9.9	3.7	0.25	11	22 32.7	21 55 53.60	14 9 49.1	8.5	3.2	0.22
27	1 22.3	21 48 23.78	12 19 23.6	10.2	3.8	0.26	12	22 33.9	22 0 58.14	13 49 53.2	8.4	3.2	0.22
28	1 19.7	21 49 46.02	11 54 11.8	10.5	3.9	0.26	13	22 35.2	22 6 8.04	13 28 36.0	8.3	3.2	0.21
29	1 16.5	21 50 28.14	11 32 8.4	10.9	4.1	0.27	14	22 36.5	22 11 22.93	13 5 58.3	8.2	3.1	0.21
30	1 12.5	21 50 28.74	11 13 36.5	11.2	4.2	0.28	15	22 37.8	22 16 42.55	12 42 0.9	8.1	3.1	0.21
31	1 7.9	21 49 47.11	10 58 56.6	11.5	4.3	0.29	16	22 39.2	22 22 6.64	12 16 44.9	8.0	3.1	0.21
Feb. 1	1 2.6	21 48 23.50	10 48 24.5	11.8	4.4	0.30	17	22 40.7	22 27 34.98	11 50 11.0	7.9	3.0	0.21
2	0 56.6	21 46 19.19	10 42 10.3	12.1	4.5	0.31	18	22 42.4	22 33 7.39	11 22 20.1	7.8	3.0	0.20
3	0 49.9	21 43 36.70	10 40 17.3	12.4	4.7	0.31	19	22 44.1	22 38 43.69	10 53 12.9	7.7	2.9	0.20
4	0 42.7	21 40 19.87	10 42 41.6	12.7	4.8	0.32	20	22 45.8	22 44 23.77	10 22 50.2	7.7	2.9	0.20
5	0 35.0	21 36 33.61	10 49 11.4	13.0	4.9	0.33	21	22 47.6	22 50 7.55	9 51 12.9	7.6	2.9	0.20
6	0 27.0	21 32 23.88	10 59 28.0	13.2	5.0	0.33	22	22 49.4	22 55 54.93	9 18 21.8	7.5	2.9	0.20
7	0 18.6	21 27 57.43	11 13 5.0	13.4	5.0	0.34	23	22 51.3	23 1 45.89	8 44 17.6	7.5	2.8	0.19
8	0 10.1	21 23 21.54	11 29 32.0	13.5	5.1	0.34	24	22 53.2	23 7 40.40	8 9 1.0	7.4	2.8	0.19
9	0 1.6	21 18 43.58	11 48 15.4	13.6	5.1	0.35	25	22 55.2	23 13 38.47	7 32 32.9	7.3	2.8	0.19
9	23 53.1	21 14 10.65	12 8 39.2	13.7	5.2	0.35	26	22 57.3	23 19 40.10	6 54 54.1	7.2	2.8	0.19
10	23 44.8	21 9 49.31	12 30 8.6	13.6	5.2	0.35	27	22 59.5	23 25 45.34	6 16 5.5	7.2	2.7	0.19
11	23 36.8	21 5 45.25	12 52 10.6	13.6	5.1	0.35	28	23 1.7	23 31 54.26	5 36 8.0	7.1	2.7	0.18
12	23 29.2	21 2 3.24	13 14 16.3	13.5	5.1	0.34	29	23 4.0	23 38 6.95	4 55 2.5	7.0	2.7	0.18
13	23 22.0	20 58 46.94	13 35 59.9	13.4	5.0	0.34	30	23 6.3	23 44 23.50	4 12 50.0	7.0	2.6	0.18
14	23 15.2	20 55 58.94	13 57 0.6	13.2	5.0	0.34	31	23 8.7	23 50 44.04	3 29 31.8	7.0	2.6	0.18

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
Apr. 1	h m	h m s	° ' "	"	"	s	May 18	h m	h m s	° ' "	"	"	s
2	23 11.2	23 57 8.68	- 2 45 9.2	6.9	2.6	0.18	18	1 28.6	5 16 24.77	+25 10 12.9	11.2	4.2	0.31
3	23 13.7	0 3 37.58	1 59 43.5	6.9	2.6	0.17	19	1 28.2	5 19 52.48	25 6 39.2	11.5	4.3	0.32
4	23 16.3	0 10 10.91	1 13 16.3	6.8	2.6	0.17	20	1 27.4	5 23 0.75	25 1 35.1	11.8	4.4	0.32
5	23 19.0	0 16 48.82	0 25 49.3	6.8	2.6	0.17	21	1 26.2	5 25 49.24	24 55 5.1	12.1	4.5	0.33
6	23 21.7	0 23 31.49	+ 0 22 35.3	6.8	2.6	0.17	22	1 24.8	5 28 17.66	24 47 13.4	12.4	4.6	0.34
7	23 24.5	0 30 19.12	+ 1 11 55.2	6.8	2.6	0.17	23	1 23.0	5 30 25.72	+24 38 4.5	12.6	4.8	0.34
8	23 27.4	0 37 11.88	2 2 7.8	6.7	2.5	0.17	24	1 20.8	5 32 13.27	24 27 42.3	12.9	4.9	0.35
9	23 30.5	0 44 9.95	2 53 10.1	6.7	2.5	0.17	25	1 18.3	5 33 40.19	24 16 11.2	13.2	5.0	0.36
10	23 33.6	0 51 13.49	3 44 58.5	6.7	2.5	0.17	26	1 15.5	5 34 46.43	24 3 35.8	13.5	5.1	0.37
11	23 36.8	0 58 22.65	4 37 28.9	6.7	2.5	0.17	27	1 12.3	5 35 32.10	23 50 0.5	13.8	5.2	0.38
12	23 40.1	1 5 37.59	+ 5 30 36.2	6.7	2.5	0.17	28	1 8.8	5 35 57.49	+23 35 29.6	14.0	5.3	0.38
13	23 43.5	1 12 58.37	6 24 15.8	6.6	2.5	0.17	29	1 5.0	5 36 2.91	23 20 7.8	14.3	5.4	0.39
14	23 47.0	1 20 25.04	7 18 21.3	6.6	2.5	0.17	30	1 0.8	5 35 48.90	23 4 0.4	14.6	5.5	0.40
15	23 50.6	1 27 57.59	8 12 45.8	6.6	2.5	0.17	31	0 56.3	5 35 16.20	22 47 13.1	14.9	5.6	0.40
16	23 54.3	1 35 35.96	9 7 21.5	6.6	2.5	0.17	June 1	0 51.5	5 34 25.72	22 29 51.5	15.1	5.7	0.41
17	23 58.1	1 43 19.98	+10 1 59.6	6.6	2.5	0.17	2	0 46.5	5 33 18.56	+22 12 2.4	15.3	5.7	0.41
18	0 1.9	1 51 9.40	10 56 30.7	6.7	2.5	0.17	3	0 41.2	5 31 56.05	21 53 52.7	15.5	5.8	0.42
19	0 5.8	1 59 3.85	11 50 44.4	6.7	2.5	0.17	4	0 35.7	5 30 19.71	21 35 30.2	15.6	5.9	0.42
20	0 9.9	2 7 2.85	12 44 29.4	6.7	2.5	0.17	5	0 30.0	5 28 31.26	21 17 3.4	15.7	5.9	0.42
21	0 14.0	2 15 5.81	13 37 33.2	6.7	2.5	0.17	6	0 24.0	5 26 32.60	20 58 41.0	15.8	5.9	0.42
22	0 18.2	2 23 11.99	+14 29 44.0	6.8	2.5	0.18	7	0 18.0	5 24 25.75	+20 40 32.2	15.9	6.0	0.43
23	0 22.3	2 31 20.55	15 20 48.9	6.8	2.6	0.18	8	0 11.9	5 22 12.93	20 22 47.0	16.0	6.0	0.43
24	0 26.5	2 39 30.49	16 10 34.9	6.9	2.6	0.18	9	0 5.7	5 19 56.40	20 5 35.2	16.0	6.0	0.43
25	0 30.8	2 47 40.78	16 58 49.9	7.0	2.6	0.18	9	23 59.5	5 17 38.47	19 49 7.1	15.9	6.0	0.43
26	0 35.0	2 55 50.27	17 45 21.7	7.1	2.6	0.19	10	23 53.3	5 15 21.44	19 33 32.8	15.9	6.0	0.43
27	0 39.2	3 3 57.76	+18 29 59.3	7.2	2.7	0.19	11	23 47.1	5 13 7.62	+19 19 1.3	15.8	6.0	0.42
28	0 43.3	3 12 2.01	19 12 32.8	7.3	2.7	0.19	12	23 41.0	5 10 59.27	19 5 41.6	15.8	5.9	0.42
29	0 47.3	3 20 1.76	19 52 54.0	7.4	2.8	0.20	13	23 35.0	5 8 58.45	18 53 42.1	15.7	5.9	0.42
30	0 51.2	3 27 55.82	20 30 56.0	7.5	2.8	0.20	14	23 29.3	5 7 7.13	18 43 9.7	15.5	5.8	0.41
May 1	0 55.1	3 35 43.02	21 6 33.4	7.6	2.9	0.20	15	23 23.7	5 5 27.12	18 34 10.6	15.3	5.8	0.41
2	0 58.8	3 43 22.21	+21 39 41.9	7.8	2.9	0.21	16	23 18.3	5 4 0.05	+18 26 49.3	15.1	5.7	0.40
3	1 2.3	3 50 52.33	22 10 19.4	7.9	3.0	0.21	17	23 13.2	5 2 47.32	18 21 9.6	14.9	5.6	0.40
4	1 5.7	3 58 12.38	22 38 25.0	8.1	3.1	0.22	18	23 8.3	5 1 50.18	18 17 14.0	14.6	5.5	0.39
5	1 8.9	4 5 21.44	23 3 58.9	8.3	3.2	0.22	19	23 3.7	5 1 9.74	18 15 2.9	14.3	5.4	0.38
6	1 11.9	4 12 18.68	23 27 2.5	8.5	3.2	0.23	20	22 59.4	5 0 46.83	18 14 36.2	14.1	5.3	0.38
7	1 14.7	4 19 3.31	+23 47 38.0	8.6	3.3	0.23	21	22 55.4	5 0 42.17	+18 15 52.2	13.8	5.2	0.37
8	1 17.3	4 25 34.61	24 5 48.5	8.8	3.4	0.24	22	22 51.7	5 0 56.33	18 18 48.6	13.5	5.1	0.36
9	1 19.6	4 31 51.91	24 21 37.4	9.0	3.4	0.24	23	22 48.3	5 1 29.75	18 23 21.5	13.2	5.0	0.35
10	1 21.7	4 37 54.57	24 35 8.9	9.2	3.5	0.25	24	22 45.2	5 2 22.74	18 29 28.6	12.9	4.9	0.34
11	1 23.6	4 43 42.03	24 46 27.5	9.4	3.6	0.26	25	22 42.5	5 3 35.55	18 37 1.5	12.6	4.8	0.33
12	1 25.2	4 49 13.73	+24 55 37.6	9.7	3.7	0.27	26	22 40.1	5 5 8.32	+18 45 56.6	12.3	4.6	0.33
13	1 26.5	4 54 29.12	25 2 44.2	9.9	3.7	0.27	27	22 38.1	5 7 1.12	18 56 6.9	12.0	4.5	0.32
14	1 27.5	4 59 27.72	25 7 52.2	10.2	3.8	0.28	28	22 36.3	5 9 14.02	19 7 25.6	11.7	4.4	0.31
15	1 28.2	5 4 9.04	25 11 6.1	10.4	3.9	0.29	29	22 34.9	5 11 47.03	19 19 45.4	11.4	4.3	0.31
16	1 28.7	5 8 32.62	25 12 31.0	10.7	4.0	0.30	30	22 33.9	5 14 40.11	19 32 58.4	11.2	4.2	0.30
17	1 28.8	5 12 38.00	+25 12 11.7	11.0	4.1	0.30	31	22 33.2	5 17 53.24	+19 46 56.4	10.9	4.1	0.29
18	1 28.6	5 16 24.77	+25 10 12.9	11.2	4.2	0.31	32	22 32.8	5 21 26.38	+20 1 31.0	10.6	4.0	0.29

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
July 1	22 33.2	5 17 53.24	+19 46 56.4	10.9	4.1	0.29	Aug. 17	1 5.7	10 52 7.24	+ 8 15 22.2	6.9	2.6	0.17
2	22 32.8	5 21 26.36	20 1 31.0	10.6	4.0	0.29	18	1 7.8	10 58 14.11	7 30 48.1	6.9	2.6	0.17
3	22 32.7	5 25 19.46	20 16 33.2	10.4	3.9	0.28	19	1 9.8	11 4 14.14	6 46 15.2	7.0	2.6	0.17
4	22 33.0	5 29 32.43	20 31 53.7	10.2	3.8	0.27	20	1 11.8	11 10 7.53	6 1 46.9	7.0	2.6	0.17
5	22 33.6	5 34 5.21	20 47 22.7	9.9	3.7	0.27	21	1 13.7	11 15 54.49	5 17 26.1	7.1	2.7	0.18
6	22 34.5	5 38 57.68	+21 2 50.2	9.7	3.7	0.26	22	1 15.4	11 21 35.25	+ 4 33 15.7	7.1	2.7	0.18
7	22 35.8	5 44 9.74	21 18 5.8	9.4	3.6	0.26	23	1 17.0	11 27 9.95	3 49 18.2	7.2	2.7	0.18
8	22 37.4	5 49 41.27	21 32 58.7	9.2	3.5	0.25	24	1 18.5	11 32 38.76	3 5 36.1	7.3	2.7	0.18
9	22 39.3	5 55 32.08	21 47 17.8	9.0	3.4	0.24	25	1 19.9	11 38 1.82	2 22 12.0	7.3	2.7	0.18
10	22 41.5	6 1 41.91	22 0 51.2	8.8	3.3	0.24	26	1 21.3	11 43 19.26	1 39 8.2	7.4	2.8	0.19
11	22 44.1	6 8 10.40	+22 13 26.9	8.6	3.3	0.23	27	1 22.6	11 48 31.18	+ 0 56 26.9	7.5	2.8	0.19
12	22 46.9	6 14 57.13	22 24 53.0	8.4	3.2	0.23	28	1 23.7	11 53 37.67	+ 0 14 10.4	7.6	2.8	0.19
13	22 50.0	6 22 1.58	22 34 57.5	8.2	3.1	0.22	29	1 24.8	11 58 38.77	0 27 38.8	7.6	2.8	0.19
14	22 53.3	6 29 23.03	22 43 28.1	8.0	3.0	0.22	30	1 25.8	12 3 34.53	1 8 58.7	7.7	2.9	0.19
15	22 57.0	6 37 0.61	22 50 12.8	7.9	3.0	0.21	31	1 26.7	12 8 24.93	1 49 46.8	7.7	2.9	0.20
16	23 1.0	6 44 53.33	+22 55 0.0	7.7	2.9	0.21	Sept. 1	1 27.5	12 13 9.97	- 2 30 0.9	7.8	3.0	0.20
17	23 5.2	6 53 0.03	22 57 38.6	7.5	2.9	0.20	2	1 28.2	12 17 49.60	3 9 38.7	7.9	3.0	0.20
18	23 9.6	7 1 19.33	22 57 59.3	7.4	2.8	0.20	3	1 28.8	12 22 33.73	3 48 37.6	8.0	3.0	0.20
19	23 14.1	7 9 49.72	22 55 53.8	7.3	2.8	0.20	4	1 29.4	12 26 52.25	4 26 55.0	8.1	3.1	0.20
20	23 18.8	7 18 29.51	22 51 14.8	7.2	2.7	0.20	5	1 29.8	12 31 14.99	5 4 27.9	8.2	3.1	0.21
21	23 23.6	7 27 16.92	+22 43 57.2	7.1	2.7	0.19	6	1 30.2	12 35 31.76	- 5 41 13.8	8.3	3.2	0.21
22	23 28.6	7 36 10.12	22 33 57.9	7.0	2.7	0.19	7	1 30.4	12 39 42.33	6 17 9.6	8.4	3.2	0.21
23	23 33.6	7 45 7.24	22 21 15.6	6.9	2.6	0.19	8	1 30.5	12 43 46.42	6 52 12.0	8.5	3.2	0.21
24	23 38.6	7 54 6.41	22 5 51.3	6.9	2.6	0.19	9	1 30.5	12 47 43.69	7 26 17.4	8.7	3.3	0.22
25	23 43.6	8 3 5.83	21 47 47.7	6.8	2.6	0.19	10	1 30.4	12 51 33.77	7 59 21.9	8.8	3.3	0.22
26	23 48.6	8 12 3.81	+21 27 9.3	6.8	2.6	0.18	11	1 30.1	12 55 16.21	- 8 31 21.5	9.0	3.4	0.23
27	23 53.5	8 20 58.81	21 4 2.0	6.7	2.5	0.18	12	1 29.8	12 58 50.49	9 2 11.6	9.1	3.4	0.23
28	23 58.4	8 29 49.47	20 38 33.4	6.7	2.5	0.18	13	1 29.3	13 2 16.05	9 31 47.3	9.3	3.5	0.23
30	0 3.2	8 38 34.54	20 10 51.4	6.7	2.5	0.18	14	1 28.7	13 5 32.24	10 0 3.3	9.4	3.6	0.24
31	0 7.9	8 47 13.05	19 41 5.0	6.7	2.5	0.18	15	1 27.8	13 8 38.32	10 26 53.7	9.6	3.6	0.24
Aug. 1	0 12.5	8 55 44.14	+19 9 23.5	6.6	2.5	0.17	16	1 26.8	13 11 33.51	-10 52 12.1	9.7	3.7	0.25
2	0 16.9	9 4 7.16	18 35 56.5	6.6	2.5	0.17	17	1 25.5	13 14 16.91	11 15 51.2	9.9	3.8	0.25
3	0 21.2	9 12 21.61	18 0 53.2	6.6	2.5	0.17	18	1 24.1	13 16 47.52	11 37 43.2	10.1	3.8	0.26
4	0 25.4	9 20 27.14	17 24 22.8	6.6	2.5	0.17	19	1 22.4	13 19 4.30	11 57 39.3	10.2	3.9	0.26
5	0 29.3	9 28 23.49	16 46 34.4	6.6	2.5	0.17	20	1 20.5	13 21 6.09	12 15 30.2	10.4	4.0	0.27
6	0 33.1	9 36 10.60	+16 7 36.4	6.6	2.5	0.17	21	1 18.4	13 22 51.62	-12 31 5.3	10.6	4.0	0.27
7	0 36.9	9 43 48.43	15 27 37.0	6.6	2.5	0.17	22	1 15.9	13 24 19.59	12 44 13.1	10.8	4.1	0.28
8	0 40.3	9 51 17.01	14 46 43.9	6.6	2.5	0.17	23	1 13.1	13 25 28.62	12 54 41.2	11.0	4.2	0.28
9	0 43.7	9 58 36.44	14 5 3.9	6.6	2.5	0.17	24	1 10.0	13 26 17.30	13 2 16.7	11.3	4.2	0.29
10	0 47.0	10 5 46.88	13 22 43.6	6.6	2.5	0.17	25	1 6.5	13 26 44.23	13 6 45.1	11.5	4.3	0.29
11	0 50.1	10 12 48.56	+12 39 49.4	6.7	2.5	0.17	26	1 2.7	13 26 48.02	-13 7 51.6	11.8	4.4	0.30
12	0 53.0	10 19 41.67	11 56 27.0	6.7	2.5	0.17	27	0 58.4	13 26 27.41	13 5 21.2	12.0	4.5	0.31
13	0 55.8	10 26 26.45	11 12 41.6	6.7	2.5	0.17	28	0 53.7	13 25 41.39	12 58 59.0	12.2	4.6	0.31
14	0 58.5	10 33 3.14	10 28 38.0	6.7	2.5	0.17	29	0 48.6	13 24 29.17	12 48 31.5	12.4	4.7	0.32
15	1 1.0	10 39 32.00	9 44 20.9	6.8	2.5	0.17	30	0 43.0	13 22 50.30	12 33 46.9	12.6	4.8	0.32
16	1 3.4	10 45 53.28	+ 8 59 54.3	6.8	2.6	0.17	31	0 37.0	13 20 45.20	-12 14 36.2	12.8	4.8	0.33
17	1 5.7	10 52 7.24	+ 8 15 22.2	6.9	2.6	0.17	32	0 30.5	13 18 14.49	-11 50 55.7	13.0	4.9	0.33

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	0 37.0	13 20 45.20	12 14 36.2	12.8	4.8	0.33	Nov. 15	23 17.6	15 2 30.63	16 38 13.3	6.3	2.4	0.17
2	0 30.5	13 18 14.49	11 50 55.7	13.0	4.9	0.33	16	23 19.9	15 8 49.25	17 11 11.7	6.3	2.4	0.17
3	0 23.7	13 15 19.92	11 22 48.1	13.1	4.9	0.33	17	23 22.3	15 15 9.41	17 43 22.5	6.3	2.4	0.17
4	0 16.5	13 12 4.06	10 50 24.1	13.2	4.9	0.33	18	23 24.7	15 21 31.13	18 14 43.5	6.3	2.3	0.17
5	0 9.0	13 8 30.42	10 14 3.8	13.3	4.9	0.34	19	23 27.1	15 27 54.44	18 45 12.6	6.2	2.3	0.17
6	0 1.3	13 4 43.54	9 34 18.3	13.4	5.0	0.34	20	23 29.6	15 34 19.37	19 14 47.8	6.2	2.3	0.17
6	23 53.5	13 0 48.83	8 51 49.6	13.4	5.0	0.34	21	23 32.1	15 40 45.97	19 43 27.7	6.2	2.3	0.17
7	23 45.6	12 56 52.41	8 7 30.6	13.3	5.0	0.33	22	23 34.6	15 47 14.26	20 11 10.5	6.2	2.3	0.17
8	23 37.8	12 53 0.87	7 22 21.7	13.1	4.9	0.33	23	23 37.2	15 53 44.25	20 37 54.3	6.2	2.3	0.17
9	23 30.2	12 49 20.92	6 37 29.0	12.9	4.9	0.33	24	23 39.8	16 0 15.99	21 3 37.6	6.1	2.3	0.17
10	23 23.0	12 45 59.10	5 54 0.1	12.8	4.8	0.32	25	23 42.4	16 6 49.49	21 28 18.7	6.1	2.3	0.17
11	23 16.1	12 43 1.41	5 13 0.5	12.6	4.8	0.32	26	23 45.1	16 13 24.78	21 51 56.4	6.1	2.3	0.17
12	23 9.7	12 40 33.01	4 35 30.0	12.4	4.7	0.31	27	23 47.7	16 20 1.88	22 14 29.1	6.1	2.3	0.17
13	23 3.8	12 38 37.98	4 2 19.1	12.1	4.6	0.30	28	23 50.4	16 26 40.79	22 35 55.3	6.1	2.3	0.17
14	22 58.5	12 37 19.33	3 34 7.2	11.8	4.4	0.30	29	23 53.1	16 33 21.51	22 56 13.4	6.1	2.3	0.17
15	22 53.9	12 36 38.78	3 11 22.1	11.6	4.3	0.29	30	23 55.9	16 40 4.04	23 15 22.0	6.1	2.3	0.17
16	22 49.9	12 36 36.95	2 54 19.8	11.3	4.1	0.28	Dec. 1	23 58.7	16 46 48.36	23 33 19.8	6.1	2.3	0.17
17	22 46.7	12 37 13.43	2 43 4.7	11.0	4.0	0.27	3	0 1.5	16 53 34.43	23 50 5.2	6.1	2.3	0.17
18	22 44.0	12 38 27.00	2 37 32.5	10.6	3.9	0.26	4	0 4.3	17 0 22.21	24 5 36.8	6.1	2.3	0.17
19	22 41.9	12 40 15.72	2 37 31.4	10.3	3.8	0.26	5	0 7.2	17 7 11.66	24 19 53.2	6.2	2.3	0.17
20	22 40.3	12 42 37.20	2 42 43.3	9.9	3.7	0.25	6	0 10.1	17 14 2.73	24 32 52.8	6.2	2.3	0.17
21	22 39.2	12 45 28.74	2 52 45.7	9.5	3.6	0.24	7	0 13.0	17 20 55.33	24 44 34.4	6.2	2.3	0.17
22	22 38.6	12 48 47.49	3 7 13.7	9.2	3.5	0.23	8	0 15.9	17 27 49.37	24 54 56.5	6.2	2.3	0.17
23	22 38.4	12 52 30.57	3 25 41.2	8.9	3.4	0.23	9	0 18.9	17 34 44.75	25 3 57.8	6.2	2.4	0.17
24	22 38.5	12 56 35.15	3 47 41.4	8.7	3.3	0.22	10	0 21.9	17 41 41.36	25 11 36.8	6.3	2.4	0.17
25	22 38.9	13 0 58.59	4 12 48.3	8.5	3.2	0.22	11	0 24.9	17 48 39.05	25 17 52.3	6.3	2.4	0.17
26	22 39.6	13 5 38.45	4 40 36.7	8.3	3.1	0.21	12	0 27.9	17 55 37.66	25 22 43.0	6.3	2.4	0.17
27	22 40.6	13 10 32.48	5 10 43.0	8.1	3.0	0.21	13	0 30.9	18 2 37.02	25 26 7.7	6.3	2.4	0.17
28	22 41.8	13 15 38.68	5 42 45.9	8.0	3.0	0.20	14	0 34.0	18 9 36.93	25 28 5.0	6.4	2.4	0.18
29	22 43.1	13 20 55.29	6 16 25.2	7.8	2.9	0.20	15	0 37.1	18 16 37.17	25 28 34.0	6.4	2.4	0.18
30	22 44.5	13 26 20.78	6 51 22.9	7.7	2.9	0.19	16	0 40.1	18 23 37.48	25 27 33.4	6.5	2.4	0.18
31	22 46.2	13 31 53.80	7 27 22.5	7.5	2.8	0.19	17	0 43.2	18 30 37.59	25 25 2.4	6.5	2.5	0.18
Nov. 1	22 47.9	13 37 33.23	8 4 10.0	7.4	2.8	0.19	18	0 46.2	18 37 37.19	25 21 0.2	6.6	2.5	0.18
2	22 49.7	13 43 18.11	8 41 32.4	7.2	2.7	0.19	19	0 49.2	18 44 35.92	25 15 26.1	6.6	2.5	0.19
3	22 51.6	13 49 7.64	9 19 18.5	7.1	2.7	0.18	20	0 52.2	18 51 33.38	25 8 19.5	6.7	2.6	0.19
4	22 53.5	13 55 1.16	9 57 18.1	7.0	2.6	0.18	21	0 55.2	18 58 29.14	24 59 39.9	6.7	2.6	0.19
5	22 55.5	14 0 58.10	10 35 22.4	6.9	2.6	0.18	22	0 58.2	19 5 22.71	24 49 27.5	6.8	2.6	0.19
6	22 57.5	14 6 58.02	11 13 23.4	6.8	2.6	0.18	23	1 1.1	19 12 13.54	24 37 42.4	6.9	2.6	0.19
7	22 59.6	14 13 0.55	11 51 14.6	6.8	2.6	0.18	24	1 4.0	19 19 0.97	24 24 25.2	6.9	2.6	0.20
8	23 1.8	14 19 5.40	12 28 50.1	6.7	2.5	0.18	25	1 6.8	19 25 44.33	24 9 36.8	7.0	2.7	0.20
9	23 4.0	14 25 12.35	13 6 4.6	6.7	2.5	0.17	26	1 9.5	19 32 22.81	23 53 18.8	7.1	2.7	0.20
10	23 6.2	14 31 21.20	13 42 52.9	6.6	2.5	0.17	27	1 12.0	19 38 55.52	23 35 33.0	7.2	2.8	0.20
11	23 8.4	14 37 31.83	14 19 11.0	6.5	2.5	0.17	28	1 14.5	19 45 21.46	23 16 22.2	7.3	2.8	0.20
12	23 10.7	14 43 44.13	14 54 55.3	6.5	2.5	0.17	29	1 16.9	19 51 39.45	22 55 49.8	7.4	2.9	0.21
13	23 12.9	14 49 58.07	15 30 2.4	6.4	2.4	0.17	30	1 19.0	19 57 48.19	22 34 0.4	7.6	2.9	0.21
14	23 15.2	14 56 13.58	16 4 29.4	6.4	2.4	0.17	31	1 21.0	20 3 46.20	22 10 59.4	7.8	3.0	0.21
15	23 17.6	15 2 30.63	16 38 13.3	6.3	2.4	0.17	32	1 22.9	20 9 31.88	21 46 53.2	7.9	3.0	0.21

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	20 56.7	15 39 43.11	16 50 11.9	9.6	9.2	0.64	Feb. 15	21 48.2	19 32 33.75	21 8 34.6	7.2	6.9	0.50
1	20 57.5	15 44 24.86	17 6 59.2	9.5	9.2	0.64	16	21 49.4	19 37 44.70	21 0 10.2	7.1	6.9	0.49
2	20 58.3	15 49 8.04	17 23 26.2	9.4	9.1	0.63	17	21 50.6	19 42 55.14	20 51 8.8	7.1	6.9	0.49
3	20 59.2	15 53 52.63	17 39 32.2	9.4	9.0	0.63	18	21 51.7	19 48 5.04	20 41 30.8	7.1	6.8	0.49
4	21 0.0	15 58 38.60	17 55 16.3	9.3	8.9	0.63	19	21 52.9	19 53 14.35	20 31 16.6	7.0	6.8	0.48
5	21 0.9	16 3 25.95	18 10 37.9	9.2	8.9	0.62	20	21 54.1	19 58 23.03	20 20 26.6	7.0	6.8	0.48
6	21 1.7	16 8 14.65	18 25 36.0	9.1	8.8	0.62	21	21 55.3	20 3 31.05	20 9 1.0	7.0	6.7	0.48
7	21 2.6	16 13 4.70	18 40 9.8	9.1	8.7	0.62	22	21 56.5	20 8 38.37	19 57 0.2	6.9	6.7	0.47
8	21 3.5	16 17 56.07	18 54 18.5	9.0	8.7	0.61	23	21 57.7	20 13 44.97	19 44 24.6	6.9	6.7	0.47
9	21 4.4	16 22 48.72	19 8 1.3	8.9	8.6	0.61	24	21 58.9	20 18 50.81	19 31 14.5	6.9	6.6	0.47
10	21 5.3	16 27 42.63	19 21 17.5	8.9	8.6	0.61	25	22 0.0	20 23 55.85	19 17 30.5	6.8	6.6	0.47
11	21 6.2	16 32 37.77	19 34 6.4	8.8	8.5	0.60	26	22 1.2	20 29 0.10	19 3 12.9	6.8	6.6	0.46
12	21 7.2	16 37 34.12	19 46 27.3	8.8	8.4	0.60	27	22 2.3	20 34 3.52	18 48 22.3	6.8	6.6	0.46
13	21 8.2	16 42 31.63	19 58 19.4	8.7	8.4	0.60	28	22 3.4	20 39 6.08	18 32 59.2	6.7	6.5	0.46
14	21 9.3	16 47 30.27	20 9 42.0	8.7	8.3	0.59	29	22 4.4	20 44 7.77	18 17 4.0	6.7	6.5	0.46
15	21 10.4	16 52 30.01	20 20 34.5	8.6	8.3	0.59	Mar. 1	22 5.5	20 49 8.57	18 0 37.4	6.7	6.5	0.45
16	21 11.5	16 57 30.83	20 30 56.3	8.5	8.2	0.59	2	22 6.5	20 54 8.46	17 43 39.8	6.7	6.4	0.45
17	21 12.6	17 2 32.67	20 40 46.8	8.5	8.2	0.58	3	22 7.6	20 59 7.45	17 26 11.7	6.6	6.4	0.45
18	21 13.7	17 7 35.51	20 50 5.4	8.4	8.1	0.58	4	22 8.6	21 4 5.50	17 8 13.6	6.6	6.4	0.44
19	21 14.8	17 12 39.30	20 58 51.6	8.3	8.0	0.58	5	22 9.6	21 9 2.62	16 49 46.2	6.6	6.4	0.44
20	21 15.9	17 17 44.00	21 7 4.8	8.3	8.0	0.57	6	22 10.6	21 13 58.80	16 30 50.1	6.6	6.3	0.44
21	21 17.0	17 22 49.57	21 14 44.5	8.3	7.9	0.57	7	22 11.6	21 18 54.01	16 11 26.0	6.5	6.3	0.44
22	21 18.2	17 27 55.97	21 21 50.2	8.2	7.9	0.57	8	22 12.5	21 23 48.25	15 51 34.4	6.5	6.3	0.43
23	21 19.3	17 33 3.15	21 28 21.5	8.2	7.8	0.57	9	22 13.5	21 28 41.53	15 31 16.0	6.5	6.2	0.43
24	21 20.5	17 38 11.09	21 34 17.9	8.1	7.8	0.56	10	22 14.4	21 33 33.83	15 10 31.4	6.4	6.2	0.43
25	21 21.7	17 43 19.73	21 39 39.0	8.1	7.8	0.56	11	22 15.3	21 38 25.16	14 49 21.4	6.4	6.2	0.43
26	21 23.0	17 48 29.03	21 44 24.4	8.0	7.7	0.56	12	22 16.2	21 43 15.53	14 27 46.6	6.4	6.2	0.42
27	21 24.2	17 53 38.95	21 48 33.8	8.0	7.7	0.55	13	22 17.1	21 48 4.94	14 5 47.6	6.3	6.1	0.42
28	21 25.4	17 58 49.42	21 52 6.7	7.9	7.6	0.55	14	22 18.0	21 52 53.38	13 43 25.2	6.3	6.1	0.42
29	21 26.6	18 4 0.40	21 55 2.9	7.9	7.6	0.55	15	22 18.9	21 57 40.88	13 20 40.1	6.3	6.1	0.42
30	21 27.9	18 9 11.86	21 57 22.1	7.8	7.5	0.54	16	22 19.7	22 2 27.44	12 57 32.9	6.3	6.1	0.42
31	21 29.1	18 14 23.74	21 59 4.0	7.8	7.5	0.54	17	22 20.5	22 7 13.08	12 34 4.2	6.2	6.1	0.41
Feb. 1	21 30.4	18 19 35.99	22 0 8.4	7.7	7.5	0.54	18	22 21.3	22 11 57.81	12 10 14.7	6.2	6.0	0.41
2	21 31.7	18 24 48.54	22 0 35.0	7.7	7.4	0.53	19	22 22.1	22 16 41.64	11 46 5.2	6.2	6.0	0.41
3	21 33.0	18 30 1.34	22 0 23.7	7.6	7.4	0.53	20	22 22.9	22 21 24.58	11 21 36.4	6.2	6.0	0.41
4	21 34.3	18 35 14.33	21 59 34.3	7.6	7.3	0.53	21	22 23.7	22 26 6.67	10 56 48.9	6.2	6.0	0.41
5	21 35.5	18 40 27.45	21 58 6.8	7.6	7.3	0.53	22	22 24.4	22 30 47.93	10 31 43.6	6.1	6.0	0.40
6	21 36.8	18 45 40.65	21 56 1.1	7.5	7.3	0.52	23	22 25.0	22 35 28.38	10 6 20.9	6.1	5.9	0.40
7	21 38.1	18 50 53.87	21 53 17.1	7.5	7.2	0.52	24	22 25.7	22 40 8.05	9 40 41.5	6.1	5.9	0.40
8	21 39.4	18 56 7.05	21 49 54.9	7.4	7.2	0.52	25	22 26.4	22 44 46.96	9 14 46.1	6.1	5.9	0.40
9	21 40.6	19 1 20.15	21 45 54.3	7.4	7.1	0.51	26	22 27.1	22 49 25.14	8 48 35.4	6.1	5.9	0.40
10	21 41.9	19 6 33.10	21 41 15.6	7.4	7.1	0.51	27	22 27.8	22 54 2.62	8 22 10.1	6.0	5.9	0.39
11	21 43.1	19 11 45.85	21 35 58.9	7.3	7.1	0.51	28	22 28.5	22 58 39.43	7 55 30.9	6.0	5.8	0.39
12	21 44.4	19 16 58.35	21 30 4.3	7.3	7.0	0.51	29	22 29.2	23 3 15.60	7 28 38.4	6.0	5.8	0.39
13	21 45.7	19 22 10.53	21 23 31.9	7.2	7.0	0.50	30	22 29.8	23 7 51.17	7 1 33.3	6.0	5.8	0.39
14	21 47.0	19 27 22.34	21 16 21.9	7.2	7.0	0.50	31	22 30.5	23 12 26.17	6 34 16.3	6.0	5.8	0.39
15	21 48.2	19 32 33.75	21 8 34.6	7.2	6.9	0.50	32	22 31.1	23 17 0.64	6 6 47.9	6.0	5.8	0.39

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FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
July 1	23 55.8	6 40 46.34	+23 37 39.2	5.1	4.9	0.36	Aug. 17	0 47.1	10 33 33.42	+10 37 42.6	5.2	5.1	0.34
2	23 57.2	6 46 8.34	23 34 19.3	5.1	4.9	0.36	18	0 47.8	10 38 13.09	10 10 1.4	5.2	5.1	0.34
3	23 58.6	6 51 30.08	23 30 17.4	5.1	4.9	0.36	19	0 48.5	10 42 51.92	9 42 4.0	5.3	5.1	0.34
5	0 0.1	6 56 51.51	23 25 33.4	5.1	4.9	0.36	20	0 49.2	10 47 29.93	9 13 51.1	5.3	5.1	0.34
6	0 1.5	7 2 12.56	23 20 7.5	5.1	4.9	0.36	21	0 49.9	10 52 7.16	8 45 23.4	5.3	5.1	0.34
7	0 2.9	7 7 33.18	+23 14 0.0	5.1	4.9	0.36	22	0 50.6	10 56 43.65	+ 8 16 41.7	5.3	5.1	0.34
8	0 4.3	7 12 53.32	23 7 11.1	5.1	4.9	0.36	23	0 51.3	11 1 19.43	7 47 46.6	5.3	5.1	0.34
9	0 5.7	7 18 12.93	22 59 41.1	5.1	4.9	0.36	24	0 51.9	11 5 54.54	7 18 38.9	5.3	5.1	0.34
10	0 7.1	7 23 31.96	22 51 30.1	5.1	4.9	0.36	25	0 52.5	11 10 29.01	6 49 19.2	5.3	5.1	0.34
11	0 8.4	7 28 50.36	22 42 38.5	5.1	4.9	0.36	26	0 53.1	11 15 2.89	6 19 48.3	5.3	5.1	0.34
12	0 9.8	7 34 8.06	+22 33 6.8	5.1	4.9	0.36	27	0 53.7	11 19 36.22	+ 5 50 6.9	5.3	5.1	0.34
13	0 11.1	7 39 25.01	22 22 55.3	5.1	4.9	0.36	28	0 54.3	11 24 9.03	5 20 15.6	5.3	5.2	0.35
14	0 12.4	7 44 41.18	22 12 4.5	5.1	4.9	0.36	29	0 54.9	11 28 41.36	4 50 15.1	5.3	5.2	0.35
15	0 13.7	7 49 56.54	22 0 34.5	5.1	4.9	0.35	30	0 55.5	11 33 13.26	4 20 6.2	5.3	5.2	0.35
16	0 15.0	7 55 11.04	21 48 25.9	5.1	4.9	0.35	31	0 56.1	11 37 44.77	3 49 49.8	5.4	5.2	0.35
17	0 16.3	8 0 24.63	+21 35 39.1	5.1	4.9	0.35	Sept. 1	0 56.7	11 42 15.94	+ 3 19 26.5	5.4	5.2	0.35
18	0 17.6	8 5 37.29	21 22 14.7	5.1	4.9	0.35	2	0 57.3	11 46 46.79	2 48 56.9	5.4	5.2	0.35
19	0 18.8	8 10 48.98	21 8 13.1	5.1	4.9	0.35	3	0 57.8	11 51 17.38	2 18 21.8	5.4	5.2	0.35
20	0 20.1	8 15 59.67	20 53 34.9	5.1	4.9	0.35	4	0 58.4	11 55 47.73	1 47 41.9	5.4	5.2	0.35
21	0 21.3	8 21 9.34	20 38 20.6	5.1	4.9	0.35	5	0 58.9	12 0 17.91	1 16 58.1	5.4	5.2	0.35
22	0 22.5	8 26 17.96	+20 22 30.8	5.1	4.9	0.35	6	0 59.5	12 4 47.94	+ 0 46 11.0	5.4	5.2	0.35
23	0 23.7	8 31 25.52	20 6 6.0	5.1	4.9	0.35	7	1 0.0	12 9 17.87	+ 0 15 21.3	5.4	5.2	0.35
24	0 24.8	8 36 32.00	19 49 6.8	5.1	5.0	0.35	8	1 0.6	12 13 47.74	0 15 30.1	5.4	5.3	0.35
25	0 25.9	8 41 37.37	19 31 33.8	5.1	5.0	0.35	9	1 1.1	12 18 17.58	0 46 22.7	5.4	5.3	0.35
26	0 27.0	8 46 41.63	19 13 27.5	5.1	5.0	0.35	10	1 1.7	12 22 47.45	1 17 15.6	5.5	5.3	0.35
27	0 28.1	8 51 44.76	+18 54 48.8	5.1	5.0	0.35	11	1 2.2	12 27 17.38	- 1 48 8.1	5.5	5.3	0.35
28	0 29.2	8 56 46.75	18 35 38.1	5.1	5.0	0.35	12	1 2.8	12 31 47.42	2 18 59.4	5.5	5.3	0.35
29	0 30.3	9 1 47.61	18 15 56.1	5.1	5.0	0.35	13	1 3.3	12 36 17.59	2 49 48.8	5.5	5.3	0.36
30	0 31.4	9 6 47.33	17 55 43.3	5.1	5.0	0.35	14	1 3.9	12 40 47.95	3 20 35.5	5.5	5.3	0.36
31	0 32.4	9 11 45.90	17 35 0.4	5.1	5.0	0.35	15	1 4.5	12 45 18.53	3 51 18.9	5.5	5.3	0.36
Aug. 1	0 33.4	9 16 43.32	+17 13 48.2	5.2	5.0	0.35	16	1 5.1	12 49 49.38	4 21 58.2	5.5	5.3	0.36
2	0 34.4	9 21 39.60	16 52 7.3	5.2	5.0	0.35	17	1 5.7	12 54 20.54	4 52 32.6	5.6	5.4	0.36
3	0 35.4	9 26 34.75	16 29 58.5	5.2	5.0	0.35	18	1 6.3	12 58 52.05	5 23 1.5	5.6	5.4	0.36
4	0 36.3	9 31 28.77	16 7 22.3	5.2	5.0	0.35	19	1 6.8	13 3 23.97	5 53 24.0	5.6	5.4	0.36
5	0 37.3	9 36 21.65	15 44 19.7	5.2	5.0	0.35	20	1 7.4	13 7 56.32	6 23 39.6	5.6	5.4	0.36
6	0 38.2	9 41 13.42	+15 20 51.2	5.2	5.0	0.35	21	1 8.0	13 12 29.16	- 6 53 47.3	5.6	5.4	0.36
7	0 39.1	9 46 4.09	14 56 57.7	5.2	5.0	0.35	22	1 8.6	13 17 2.53	7 23 46.5	5.6	5.4	0.37
8	0 40.0	9 50 53.65	14 32 39.8	5.2	5.0	0.34	23	1 9.2	13 21 36.46	7 53 36.6	5.6	5.4	0.37
9	0 40.9	9 55 42.14	14 7 58.2	5.2	5.0	0.34	24	1 9.8	13 26 10.99	8 23 16.7	5.6	5.4	0.37
10	0 41.7	10 0 29.56	13 42 53.6	5.2	5.0	0.34	25	1 10.5	13 30 46.17	8 52 46.2	5.7	5.5	0.37
11	0 42.5	10 5 15.94	+13 17 26.8	5.2	5.0	0.34	26	1 11.1	13 35 22.05	9 22 4.1	5.7	5.5	0.37
12	0 43.3	10 10 1.29	12 51 38.6	5.2	5.0	0.34	27	1 11.8	13 39 58.66	9 51 9.9	5.7	5.5	0.37
13	0 44.1	10 14 45.63	12 25 29.8	5.2	5.0	0.34	28	1 12.5	13 44 36.04	10 20 2.7	5.7	5.5	0.37
14	0 44.9	10 19 28.99	11 59 1.0	5.2	5.0	0.34	29	1 13.2	13 49 14.22	10 48 41.7	5.7	5.5	0.38
15	0 45.7	10 24 11.40	11 32 13.1	5.2	5.1	0.34	30	1 13.9	13 53 53.26	11 17 6.3	5.7	5.5	0.38
16	0 46.4	10 28 52.87	+11 5 6.7	5.2	5.1	0.34	31	1 14.7	13 58 33.18	- 11 45 15.8	5.7	5.6	0.38
17	0 47.1	10 33 33.42	+10 37 42.6	5.2	5.1	0.34	32	1 15.4	14 3 14.01	- 12 13 9.1	5.8	5.6	0.38

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	1 14.7	13 58 33.18	-11 45 15.8	5.7	5.6	0.38	Nov. 16	2 7.1	17 52 34.65	-25 5 30.6	6.8	6.5	0.48
2	1 15.4	14 3 14.01	12 13 9.1	5.8	5.6	0.38	17	2 8.6	17 57 59.21	25 8 1.5	6.8	6.6	0.48
3	1 16.2	14 7 55.78	12 40 45.6	5.8	5.6	0.38	18	2 10.1	18 3 23.82	25 9 47.4	6.8	6.6	0.48
4	1 16.9	14 12 38.54	13 8 4.5	5.8	5.6	0.38	19	2 11.6	18 8 48.42	25 10 48.2	6.9	6.6	0.49
5	1 17.7	14 17 22.30	13 35 5.1	5.8	5.6	0.39	20	2 13.0	18 14 12.94	25 11 4.0	6.9	6.6	0.49
6	1 18.5	14 22 7.08	14 1 46.4	5.8	5.6	0.39	21	2 14.5	18 19 37.31	25 10 34.7	6.9	6.7	0.49
7	1 19.3	14 26 52.91	14 28 7.8	5.8	5.7	0.39	22	2 15.9	18 25 1.46	25 9 20.3	6.9	6.7	0.49
8	1 20.1	14 31 39.83	14 54 8.3	5.9	5.7	0.39	23	2 17.4	18 30 25.33	25 7 20.8	7.0	6.7	0.49
9	1 21.0	14 36 27.86	15 19 47.2	5.9	5.7	0.39	24	2 18.8	18 35 48.86	25 4 36.4	7.0	6.8	0.50
10	1 21.9	14 41 17.01	15 45 3.7	5.9	5.7	0.40	25	2 20.3	18 41 11.97	25 1 7.1	7.0	6.8	0.50
11	1 22.8	14 46 7.30	16 9 57.0	5.9	5.7	0.40	26	2 21.7	18 46 34.60	24 56 53.1	7.1	6.8	0.50
12	1 23.7	14 50 58.74	16 34 26.3	5.9	5.7	0.40	27	2 23.1	18 51 56.66	24 51 54.6	7.1	6.8	0.50
13	1 24.6	14 55 51.35	16 58 30.8	6.0	5.8	0.40	28	2 24.5	18 57 18.10	24 46 11.7	7.1	6.9	0.50
14	1 25.5	15 0 45.15	17 22 9.8	6.0	5.8	0.40	29	2 25.9	19 2 38.87	24 39 44.9	7.2	6.9	0.51
15	1 26.5	15 5 40.13	17 45 22.3	6.0	5.8	0.41	30	2 27.3	19 7 58.89	24 32 34.4	7.2	6.9	0.51
16	1 27.5	15 10 36.32	18 8 7.7	6.0	5.8	0.41	Dec. 1	2 28.7	19 13 18.10	24 24 40.4	7.2	7.0	0.51
17	1 28.5	15 15 33.71	18 30 25.2	6.0	5.8	0.41	2	2 30.0	19 18 36.44	24 16 3.3	7.3	7.0	0.51
18	1 29.5	15 20 32.32	18 52 14.0	6.0	5.8	0.41	3	2 31.4	19 23 53.85	24 6 43.5	7.3	7.0	0.51
19	1 30.6	15 25 32.16	19 13 33.3	6.1	5.9	0.41	4	2 32.7	19 29 10.26	23 56 41.4	7.3	7.1	0.52
20	1 31.7	15 30 33.21	19 34 22.5	6.1	5.9	0.42	5	2 34.0	19 34 25.62	23 45 57.6	7.4	7.1	0.52
21	1 32.7	15 35 35.49	19 54 40.8	6.1	5.9	0.42	6	2 35.3	19 39 39.88	23 34 32.5	7.4	7.2	0.52
22	1 33.8	15 40 38.98	20 14 27.3	6.1	5.9	0.42	7	2 36.6	19 44 52.98	23 22 26.6	7.4	7.2	0.52
23	1 35.0	15 45 43.68	20 33 41.5	6.2	5.9	0.42	8	2 37.9	19 50 4.86	23 9 40.4	7.5	7.2	0.52
24	1 36.2	15 50 49.59	20 52 22.5	6.2	5.9	0.42	9	2 39.2	19 55 15.47	22 56 14.5	7.5	7.3	0.53
25	1 37.4	15 55 56.70	21 10 29.6	6.2	6.0	0.43	10	2 40.4	20 0 24.77	22 42 9.4	7.6	7.3	0.53
26	1 38.6	16 1 4.99	21 28 2.2	6.2	6.0	0.43	11	2 41.5	20 5 32.72	22 27 25.9	7.6	7.4	0.53
27	1 39.8	16 6 14.45	21 44 59.5	6.2	6.0	0.43	12	2 42.6	20 10 39.28	22 12 4.4	7.6	7.4	0.53
28	1 41.0	16 11 25.05	22 1 21.0	6.3	6.1	0.43	13	2 43.7	20 15 44.41	21 56 5.7	7.7	7.4	0.53
29	1 42.3	16 16 36.79	22 17 5.8	6.3	6.1	0.43	14	2 44.8	20 20 48.07	21 39 30.6	7.7	7.5	0.54
30	1 43.6	16 21 49.62	22 32 13.4	6.3	6.1	0.44	15	2 45.9	20 25 50.23	21 22 19.7	7.8	7.5	0.54
31	1 44.9	16 27 3.52	22 46 43.1	6.3	6.1	0.44	16	2 47.0	20 30 50.87	21 4 33.7	7.8	7.6	0.54
Nov. 1	1 46.2	16 32 18.45	23 0 34.3	6.4	6.1	0.44	17	2 48.1	20 35 49.96	20 46 13.2	7.9	7.6	0.54
2	1 47.5	16 37 34.39	23 13 46.4	6.4	6.2	0.44	18	2 49.1	20 40 47.48	20 27 19.0	7.9	7.7	0.54
3	1 48.8	16 42 51.30	23 26 18.8	6.4	6.2	0.45	19	2 50.1	20 45 43.42	20 7 51.8	8.0	7.7	0.55
4	1 50.1	16 48 9.12	23 38 10.9	6.4	6.2	0.45	20	2 51.1	20 50 37.77	19 47 52.3	8.0	7.8	0.55
5	1 51.4	16 53 27.81	23 49 22.3	6.5	6.2	0.45	21	2 52.0	20 55 30.50	19 27 21.3	8.1	7.8	0.55
6	1 52.8	16 58 47.32	23 59 52.4	6.5	6.3	0.46	22	2 52.9	21 0 21.61	19 6 19.5	8.1	7.8	0.55
7	1 54.2	17 4 7.59	24 9 40.6	6.5	6.3	0.46	23	2 53.8	21 5 11.08	18 44 47.7	8.2	7.9	0.55
8	1 55.6	17 9 28.57	24 18 46.6	6.5	6.3	0.46	24	2 54.6	21 9 58.92	18 22 46.7	8.2	7.9	0.56
9	1 57.0	17 14 50.20	24 27 10.0	6.6	6.3	0.46	25	2 55.4	21 14 45.14	18 0 17.2	8.3	8.0	0.56
10	1 58.5	17 20 12.43	24 34 50.3	6.6	6.4	0.47	26	2 56.2	21 19 29.72	17 37 19.9	8.3	8.0	0.56
11	1 59.9	17 25 35.19	24 41 47.2	6.6	6.4	0.47	27	2 57.0	21 24 12.68	17 13 55.7	8.4	8.1	0.56
12	2 1.3	17 30 58.42	24 48 0.4	6.6	6.4	0.47	28	2 57.8	21 28 54.00	16 50 5.2	8.4	8.1	0.57
13	2 2.7	17 36 22.04	24 53 29.6	6.7	6.4	0.47	29	2 58.5	21 33 33.69	16 25 49.4	8.5	8.2	0.57
14	2 4.2	17 41 46.00	24 58 14.5	6.7	6.5	0.48	30	2 59.1	21 38 11.78	16 1 8.9	8.5	8.2	0.57
15	2 5.6	17 47 10.23	25 2 14.9	6.7	6.5	0.48	31	2 59.8	21 42 48.26	15 36 4.6	8.6	8.3	0.57
16	2 7.1	17 52 34.65	25 5 30.6	6.8	6.5	0.48	32	3 0.4	21 47 23.14	15 10 37.2	8.6	8.3	0.58

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
July 1	19 12.0	1 56 6.72	+10 5 6.8	6.6	3.7	0.25	Aug. 16	18 10.5	3 55 49.54	+19 2 37.4	8.0	4.6	0.33
2	19 10.7	1 58 47.44	10 19 56.8	6.6	3.7	0.25	17	18 9.0	3 58 17.00	19 10 42.1	8.1	4.6	0.33
3	19 9.4	2 1 28.05	10 34 39.7	6.6	3.8	0.25	18	18 7.5	4 0 43.86	19 18 37.5	8.1	4.6	0.33
4	19 8.2	2 4 8.55	10 49 15.3	6.7	3.8	0.26	19	18 6.0	4 3 10.10	19 26 23.7	8.1	4.6	0.33
5	19 6.9	2 6 48.96	11 3 43.6	6.7	3.8	0.26	20	18 4.5	4 5 35.70	19 34 0.6	8.2	4.7	0.33
6	19 5.7	2 9 29.25	+11 18 4.6	6.7	3.8	0.26	21	18 3.0	4 8 0.63	+19 41 28.3	8.2	4.7	0.34
7	19 4.4	2 12 9.41	11 32 17.9	6.8	3.8	0.26	22	18 1.5	4 10 24.88	19 48 47.0	8.3	4.7	0.34
8	19 3.1	2 14 49.44	11 46 23.5	6.8	3.9	0.26	23	17 59.9	4 12 48.42	19 55 56.6	8.3	4.7	0.34
9	19 1.9	2 17 29.34	12 0 21.2	6.8	3.9	0.26	24	17 58.4	4 15 11.24	20 2 57.2	8.4	4.8	0.34
10	19 0.6	2 20 9.08	12 14 11.0	6.8	3.9	0.26	25	17 56.8	4 17 33.31	20 9 48.8	8.4	4.8	0.35
11	18 59.3	2 22 48.68	+12 27 52.8	6.8	3.9	0.26	26	17 55.2	4 19 54.62	+20 16 31.5	8.5	4.8	0.35
12	18 58.0	2 25 28.12	12 41 26.5	6.9	3.9	0.27	27	17 53.6	4 22 15.13	20 23 5.3	8.5	4.9	0.35
13	18 56.7	2 28 7.40	12 54 52.1	6.9	3.9	0.27	28	17 52.0	4 24 34.81	20 29 30.4	8.6	4.9	0.35
14	18 55.4	2 30 46.52	13 8 9.1	6.9	4.0	0.27	29	17 50.4	4 26 53.63	20 35 46.8	8.6	4.9	0.35
15	18 54.1	2 33 25.46	13 21 17.9	7.0	4.0	0.28	30	17 48.7	4 29 11.57	20 41 54.6	8.7	5.0	0.36
16	18 52.8	2 36 4.22	+13 34 18.3	7.0	4.0	0.28	31	17 47.1	4 31 28.58	+20 47 53.8	8.7	5.0	0.36
17	18 51.5	2 38 42.80	13 47 10.2	7.1	4.0	0.28	Sept. 1	17 45.4	4 33 44.63	20 53 44.6	8.8	5.0	0.36
18	18 50.2	2 41 21.20	13 59 53.5	7.1	4.0	0.28	2	17 43.7	4 35 59.71	20 59 27.0	8.8	5.0	0.36
19	18 48.9	2 43 59.39	14 12 28.2	7.1	4.0	0.28	3	17 42.0	4 38 13.78	21 5 1.3	8.9	5.1	0.36
20	18 47.6	2 46 37.41	14 24 54.1	7.2	4.0	0.29	4	17 40.3	4 40 26.79	21 10 27.4	8.9	5.1	0.37
21	18 46.3	2 49 15.22	+14 37 11.5	7.2	4.1	0.29	5	17 38.5	4 42 38.72	+21 15 45.5	9.0	5.1	0.37
22	18 45.0	2 51 52.84	14 49 19.9	7.2	4.1	0.29	6	17 36.8	4 44 49.53	21 20 55.8	9.0	5.2	0.37
23	18 43.7	2 54 30.22	15 1 19.5	7.3	4.1	0.29	7	17 35.0	4 46 59.20	21 25 58.5	9.1	5.2	0.37
24	18 42.4	2 57 7.39	15 13 10.2	7.3	4.1	0.29	8	17 33.2	4 49 7.69	21 30 53.6	9.1	5.2	0.37
25	18 41.1	2 59 44.32	15 24 51.8	7.3	4.1	0.29	9	17 31.4	4 51 14.97	21 35 41.3	9.2	5.3	0.38
26	18 39.7	3 2 21.02	+15 36 24.5	7.4	4.1	0.29	10	17 29.6	4 53 21.03	+21 40 21.8	9.2	5.3	0.38
27	18 38.4	3 4 57.47	15 47 48.0	7.4	4.2	0.29	11	17 27.7	4 55 25.81	21 44 55.1	9.3	5.3	0.38
28	18 37.1	3 7 33.65	15 59 2.4	7.4	4.2	0.29	12	17 25.8	4 57 29.30	21 49 21.5	9.3	5.4	0.38
29	18 35.7	3 10 9.55	16 10 7.5	7.4	4.2	0.29	13	17 23.9	4 59 31.47	21 53 41.1	9.4	5.4	0.39
30	18 34.4	3 12 45.17	16 21 3.3	7.5	4.2	0.29	14	17 22.0	5 1 32.29	21 57 54.1	9.5	5.4	0.39
31	18 33.0	3 15 20.47	+16 31 49.7	7.5	4.2	0.30	15	17 20.1	5 3 31.71	+22 2 0.6	9.5	5.5	0.39
Aug. 1	18 31.7	3 17 55.46	16 42 26.7	7.6	4.3	0.30	16	17 18.1	5 5 29.73	22 6 1.0	9.6	5.5	0.40
2	18 30.3	3 20 30.11	16 52 54.3	7.6	4.3	0.30	17	17 16.1	5 7 26.30	22 9 55.3	9.7	5.6	0.40
3	18 28.9	3 23 4.40	17 3 12.5	7.7	4.3	0.30	18	17 14.1	5 9 21.39	22 13 43.8	9.8	5.6	0.40
4	18 27.6	3 25 38.31	17 13 21.1	7.7	4.3	0.31	19	17 12.1	5 11 14.95	22 17 26.5	9.8	5.7	0.41
5	18 26.2	3 28 11.83	+17 23 20.1	7.7	4.4	0.31	20	17 10.0	5 13 6.96	+22 21 3.6	9.9	5.7	0.41
6	18 24.8	3 30 44.93	17 33 9.6	7.8	4.4	0.31	21	17 7.9	5 14 57.39	22 24 35.3	10.0	5.7	0.41
7	18 23.4	3 33 17.60	17 42 49.4	7.8	4.4	0.31	22	17 5.7	5 16 46.19	22 28 1.9	10.1	5.8	0.41
8	18 22.0	3 35 49.83	17 52 19.6	7.8	4.4	0.31	23	17 3.6	5 18 33.32	22 31 23.5	10.2	5.8	0.42
9	18 20.6	3 38 21.60	18 1 40.1	7.8	4.4	0.31	24	17 1.4	5 20 18.72	22 34 40.4	10.2	5.9	0.42
10	18 19.2	3 40 52.87	+18 10 51.1	7.9	4.5	0.31	25	16 59.2	5 22 2.36	+22 37 52.6	10.3	5.9	0.42
11	18 17.7	3 43 23.65	18 19 52.6	7.9	4.5	0.31	26	16 57.0	5 23 44.18	22 41 0.5	10.3	6.0	0.43
12	18 16.3	3 45 53.92	18 28 44.6	7.9	4.5	0.32	27	16 54.7	5 25 24.14	22 44 4.1	10.4	6.0	0.43
13	18 14.9	3 48 23.66	18 37 26.9	7.9	4.5	0.32	28	16 52.4	5 27 2.19	22 47 3.7	10.5	6.0	0.43
14	18 13.4	3 50 52.85	18 45 59.8	8.0	4.6	0.32	29	16 50.1	5 28 38.25	22 49 59.6	10.6	6.1	0.44
15	18 11.9	3 53 21.49	+18 54 23.3	8.0	4.6	0.32	30	16 47.7	5 30 12.30	+22 52 52.0	10.6	6.1	0.44
16	18 10.5	3 55 49.54	+19 2 37.4	8.0	4.6	0.33	Oct 1	16 45.3	5 31 44.28	+22 55 41.0	10.7	6.2	0.44

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Semi- Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Semi- Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	16 45.3	5 31 44.28	+22 55 41.0	10.7	6.2	0.44	Nov. 16	14 2.8	5 50 7.82	+24 57 51.9	15.0	8.6	0.63
2	16 42.9	5 33 14.13	22 58 27.0	10.8	6.2	0.44	17	13 57.8	5 49 8.61	25 0 39.5	15.1	8.6	0.63
3	16 40.4	5 34 41.80	23 1 10.0	10.9	6.2	0.45	18	13 52.9	5 48 5.89	25 3 24.5	15.1	8.6	0.64
4	16 37.9	5 36 7.25	23 3 50.4	11.0	6.3	0.45	19	13 47.8	5 46 59.72	25 6 6.5	15.2	8.7	0.64
5	16 35.3	5 37 30.41	23 6 28.4	11.0	6.3	0.45	20	13 42.8	5 45 50.20	25 8 45.0	15.2	8.7	0.64
6	16 32.7	5 38 51.24	+23 9 4.3	11.1	6.4	0.46	21	13 37.6	5 44 37.39	+25 11 19.7	15.3	8.7	0.64
7	16 30.1	5 40 9.69	23 11 38.3	11.2	6.4	0.46	22	13 32.4	5 43 21.39	25 13 50.3	15.4	8.8	0.65
8	16 27.4	5 41 25.70	23 14 10.6	11.3	6.5	0.46	23	13 27.2	5 42 2.35	25 16 16.1	15.4	8.8	0.65
9	16 24.7	5 42 39.22	23 16 41.5	11.4	6.5	0.47	24	13 21.9	5 40 40.37	25 18 36.6	15.5	8.8	0.65
10	16 21.8	5 43 50.20	23 19 11.1	11.5	6.6	0.47	25	13 16.6	5 39 15.59	25 20 51.5	15.5	8.9	0.66
11	16 19.2	5 44 58.58	+23 21 39.8	11.6	6.6	0.47	26	13 11.2	5 37 48.13	+25 23 0.5	15.6	8.9	0.66
12	16 16.3	5 46 4.34	23 24 7.6	11.6	6.7	0.48	27	13 5.6	5 36 18.19	25 25 3.3	15.6	8.9	0.66
13	16 13.4	5 47 7.42	23 26 34.6	11.7	6.7	0.48	28	13 0.2	5 34 45.93	25 26 59.3	15.6	8.9	0.66
14	16 10.5	5 48 7.78	23 29 1.3	11.8	6.8	0.48	29	12 54.7	5 33 11.53	25 28 48.2	15.6	8.9	0.66
15	16 7.6	5 49 5.35	23 31 27.9	11.9	6.8	0.49	30	12 49.2	5 31 35.12	25 30 29.5	15.7	8.9	0.66
16	16 4.5	5 50 0.08	+23 33 54.5	12.0	6.9	0.49	Dec. 1	12 43.6	5 29 56.94	+25 32 3.0	15.7	9.0	0.66
17	16 1.5	5 50 51.92	23 36 21.3	12.1	6.9	0.50	2	12 38.0	5 28 17.25	25 33 28.4	15.7	9.0	0.67
18	15 58.3	5 51 40.82	23 38 48.3	12.2	7.0	0.50	3	12 32.4	5 26 36.24	25 34 45.5	15.7	9.0	0.67
19	15 55.2	5 52 26.73	23 41 15.9	12.3	7.0	0.50	4	12 26.8	5 24 54.12	25 35 54.0	15.7	9.0	0.67
20	15 51.9	5 53 9.59	23 43 44.1	12.4	7.1	0.51	5	12 21.1	5 23 11.15	25 36 54.0	15.8	9.0	0.67
21	15 48.7	5 53 49.32	+23 46 13.1	12.5	7.1	0.51	6	12 15.5	5 21 27.55	+25 37 45.2	15.8	9.0	0.67
22	15 45.4	5 54 25.88	23 48 43.0	12.6	7.2	0.51	7	12 9.8	5 19 43.57	25 38 27.7	15.8	9.0	0.67
23	15 42.0	5 54 59.21	23 51 14.1	12.7	7.2	0.52	8	12 4.2	5 17 59.45	25 39 1.5	15.8	9.0	0.67
24	15 38.6	5 55 29.24	23 53 46.4	12.8	7.3	0.52	9	11 58.5	5 16 15.43	25 39 26.9	15.7	8.9	0.66
25	15 35.1	5 55 55.94	23 56 19.9	12.9	7.3	0.53	10	11 52.8	5 14 31.75	25 39 44.0	15.7	8.9	0.66
26	15 31.5	5 56 19.23	+23 58 54.8	13.0	7.4	0.53	11	11 47.3	5 12 48.62	+25 39 52.8	15.7	8.9	0.66
27	15 27.9	5 56 39.05	24 1 31.2	13.1	7.5	0.54	12	11 41.6	5 11 6.27	25 39 53.1	15.6	8.9	0.66
28	15 24.2	5 56 55.32	24 4 9.3	13.2	7.5	0.54	13	11 36.0	5 9 24.90	25 39 45.5	15.6	8.9	0.66
29	15 20.5	5 57 7.98	24 6 48.9	13.3	7.6	0.55	14	11 30.4	5 7 44.74	25 39 30.3	15.6	8.8	0.65
30	15 16.7	5 57 17.00	24 9 30.1	13.4	7.6	0.55	15	11 24.8	5 6 5.96	25 39 7.9	15.5	8.8	0.65
31	15 12.9	5 57 22.33	+24 12 12.9	13.5	7.7	0.56	16	11 19.2	5 4 28.78	+25 38 38.8	15.4	8.8	0.65
Nov. 1	15 9.0	5 57 23.93	24 14 57.4	13.6	7.7	0.56	17	11 13.7	5 2 53.38	25 38 3.2	15.4	8.8	0.64
2	15 5.1	5 57 21.74	24 17 43.5	13.7	7.8	0.57	18	11 8.2	5 1 19.97	25 37 21.7	15.3	8.7	0.64
3	15 1.0	5 57 15.75	24 20 31.1	13.8	7.8	0.57	19	11 2.8	4 59 48.69	25 36 34.8	15.2	8.7	0.63
4	14 56.9	5 57 5.92	24 23 20.2	13.9	7.9	0.58	20	10 57.4	4 58 19.71	25 35 42.9	15.1	8.6	0.63
5	14 52.7	5 56 52.23	+24 26 10.7	14.0	7.9	0.58	21	10 52.0	4 56 53.14	+25 34 46.4	15.0	8.6	0.63
6	14 48.5	5 56 34.67	24 29 2.3	14.1	8.0	0.59	22	10 46.7	4 55 29.14	25 33 45.8	14.9	8.5	0.62
7	14 44.2	5 56 13.23	24 31 54.8	14.2	8.0	0.59	23	10 41.4	4 54 7.83	25 32 41.7	14.8	8.5	0.62
8	14 39.9	5 55 47.91	24 34 48.1	14.3	8.1	0.60	24	10 36.2	4 52 49.36	25 31 34.5	14.7	8.4	0.62
9	14 35.5	5 55 18.73	24 37 42.1	14.4	8.1	0.60	25	10 31.0	4 51 33.81	25 30 24.8	14.6	8.4	0.61
10	14 31.0	5 54 45.70	+24 40 36.3	14.5	8.2	0.60	26	10 25.8	4 50 21.31	+25 29 13.2	14.5	8.3	0.61
11	14 26.5	5 54 8.82	24 43 30.6	14.5	8.2	0.61	27	10 20.7	4 49 11.96	25 28 0.2	14.4	8.2	0.61
12	14 21.8	5 53 28.11	24 46 24.8	14.6	8.3	0.61	28	10 15.7	4 48 5.84	25 26 46.3	14.3	8.2	0.60
13	14 17.2	5 52 43.61	24 49 18.4	14.7	8.4	0.62	29	10 10.8	4 47 3.04	25 25 32.0	14.2	8.1	0.60
14	14 12.4	5 51 55.38	24 52 11.0	14.8	8.4	0.62	30	10 5.9	4 46 3.62	25 24 17.9	14.1	8.0	0.59
15	14 7.6	5 51 3.44	+24 55 2.3	14.9	8.5	0.63	31	10 1.0	4 45 7.66	+25 23 4.3	14.0	7.9	0.59
16	14 2.8	5 50 7.82	+24 57 51.9	15.0	8.6	0.63	32	9 56.2	4 44 15.18	+25 21 51.8	13.9	7.9	0.58

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	13 56.6	8 38 25.38	+19 7 7.3	2.0	21.5	1.62	Feb. 15	10 32.2	8 14 46.41	+20 34 29.5	2.0	21.5	1.62
1	13 52.3	8 37 58.86	19 8 57.0	2.0	21.5	1.62	16	10 27.8	8 14 19.47	20 35 58.3	2.0	21.5	1.62
2	13 47.9	8 37 31.82	19 10 48.2	2.0	21.6	1.63	17	10 23.4	8 13 53.06	20 37 24.9	2.0	21.4	1.62
3	13 43.5	8 37 4.31	19 12 40.8	2.0	21.6	1.63	18	10 19.1	8 13 27.19	20 38 49.3	2.0	21.4	1.61
4	13 39.1	8 36 36.31	19 14 34.7	2.0	21.6	1.63	19	10 14.7	8 13 1.86	20 40 11.5	2.0	21.4	1.61
5	13 34.7	8 36 7.86	+19 16 29.9	2.0	21.7	1.63	20	10 10.4	8 12 37.12	+20 41 31.7	2.0	21.3	1.61
6	13 30.3	8 35 38.96	19 18 26.3	2.0	21.7	1.63	21	10 6.1	8 12 12.97	20 42 49.5	2.0	21.3	1.61
7	13 25.9	8 35 9.62	19 20 23.8	2.0	21.7	1.63	22	10 1.7	8 11 49.43	20 44 4.9	2.0	21.2	1.61
8	13 21.4	8 34 39.89	19 22 22.3	2.0	21.7	1.63	23	9 57.4	8 11 26.50	20 45 18.0	2.0	21.2	1.60
9	13 17.0	8 34 9.79	19 24 21.7	2.0	21.8	1.63	24	9 53.1	8 11 4.20	20 46 29.0	2.0	21.1	1.60
10	13 12.6	8 33 39.33	+19 26 22.0	2.0	21.8	1.63	25	9 48.8	8 10 42.53	+20 47 37.6	2.0	21.1	1.60
11	13 8.1	8 33 8.53	19 28 23.0	2.0	21.8	1.63	26	9 44.5	8 10 21.52	20 48 43.7	2.0	21.0	1.60
12	13 3.7	8 32 37.42	19 30 24.5	2.0	21.8	1.63	27	9 40.3	8 10 1.17	20 49 47.3	2.0	21.0	1.59
13	12 59.2	8 32 6.02	19 32 26.5	2.0	21.8	1.64	28	9 36.0	8 9 41.52	20 50 48.8	2.0	20.9	1.59
14	12 54.8	8 31 34.35	19 34 28.9	2.0	21.8	1.64	29	9 31.8	8 9 22.57	20 51 47.9	2.0	20.9	1.59
15	12 50.3	8 31 2.45	+19 36 31.7	2.1	21.9	1.64	Mar. 1	9 27.5	8 9 4.30	+20 52 44.5	2.0	20.9	1.59
16	12 45.8	8 30 30.32	19 38 34.7	2.1	21.9	1.64	2	9 23.3	8 8 46.74	20 53 38.6	2.0	20.8	1.58
17	12 41.4	8 29 57.99	19 40 37.7	2.1	21.9	1.64	3	9 19.1	8 8 29.92	20 54 30.4	1.9	20.8	1.58
18	12 36.9	8 29 25.49	19 42 40.9	2.1	21.9	1.65	4	9 14.9	8 8 13.82	20 55 19.7	1.9	20.8	1.58
19	12 32.4	8 28 52.87	19 44 43.9	2.1	21.9	1.65	5	9 10.7	8 7 58.45	20 56 6.6	1.9	20.7	1.57
20	12 27.9	8 28 20.13	+19 46 46.7	2.1	21.9	1.65	6	9 6.5	8 7 43.81	+20 56 51.0	1.9	20.7	1.57
21	12 23.5	8 27 47.29	19 48 49.2	2.1	21.9	1.65	7	9 2.4	8 7 29.93	20 57 33.0	1.9	20.6	1.56
22	12 19.0	8 27 14.38	19 50 51.4	2.1	21.9	1.65	8	8 58.2	8 7 16.81	20 58 12.5	1.9	20.6	1.56
23	12 14.5	8 26 41.44	19 52 53.2	2.1	21.9	1.65	9	8 54.1	8 7 4.46	20 58 49.5	1.9	20.5	1.55
24	12 10.0	8 26 8.49	19 54 54.4	2.1	21.9	1.65	10	8 50.0	8 6 52.89	20 59 23.9	1.9	20.5	1.55
25	12 5.5	8 25 35.53	+19 56 54.9	2.1	21.9	1.65	11	8 45.8	8 6 42.10	+20 59 55.9	1.9	20.4	1.55
26	12 1.0	8 25 2.59	19 58 54.7	2.1	21.9	1.65	12	8 41.7	8 6 32.10	21 0 25.4	1.9	20.3	1.54
27	11 56.6	8 24 29.72	20 0 53.8	2.1	21.9	1.65	13	8 37.7	8 6 22.88	21 0 52.5	1.9	20.3	1.54
28	11 52.1	8 23 56.93	20 2 52.0	2.1	21.9	1.65	14	8 33.6	8 6 14.46	21 1 17.1	1.9	20.2	1.54
29	11 47.6	8 23 24.24	20 4 49.1	2.1	21.9	1.65	15	8 29.5	8 6 6.84	21 1 39.0	1.9	20.1	1.53
30	11 43.1	8 22 51.68	+20 6 45.3	2.1	21.9	1.65	16	8 25.5	8 6 0.02	+21 1 58.5	1.9	20.1	1.53
31	11 38.7	8 22 19.27	20 8 40.4	2.1	21.9	1.65	17	8 21.5	8 5 54.00	21 2 15.5	1.9	20.0	1.52
Feb. 1	11 34.2	8 21 47.02	20 10 34.4	2.1	21.8	1.65	18	8 17.4	8 5 48.79	21 2 30.2	1.9	19.9	1.52
2	11 29.7	8 21 14.97	20 12 27.1	2.0	21.8	1.65	19	8 13.4	8 5 44.39	21 2 42.2	1.8	19.9	1.51
3	11 25.3	8 20 43.13	20 14 18.4	2.0	21.8	1.65	20	8 9.4	8 5 40.79	21 2 51.8	1.8	19.8	1.51
4	11 20.8	8 20 11.53	+20 16 8.3	2.0	21.8	1.65	21	8 5.5	8 5 38.00	+21 2 58.9	1.8	19.8	1.50
5	11 16.4	8 19 40.20	20 17 56.8	2.0	21.8	1.64	22	8 1.5	8 5 36.01	21 3 3.5	1.8	19.7	1.50
6	11 11.9	8 19 9.16	20 19 43.9	2.0	21.7	1.64	23	7 57.5	8 5 34.83	21 3 5.6	1.8	19.6	1.49
7	11 7.5	8 18 38.44	20 21 29.4	2.0	21.7	1.64	24	7 53.6	8 5 34.44	21 3 5.4	1.8	19.6	1.49
8	11 3.1	8 18 8.04	20 23 13.4	2.0	21.7	1.64	25	7 49.7	8 5 34.85	21 3 2.7	1.8	19.5	1.48
9	10 58.6	8 17 38.00	+20 24 55.6	2.0	21.7	1.64	26	7 45.8	8 5 36.07	+21 2 57.7	1.8	19.5	1.48
10	10 54.2	8 17 8.33	20 26 35.9	2.0	21.7	1.64	27	7 41.9	8 5 38.07	21 2 50.3	1.8	19.4	1.47
11	10 49.8	8 16 39.06	20 28 14.4	2.0	21.6	1.63	28	7 38.0	8 5 40.87	21 2 40.4	1.8	19.4	1.47
12	10 45.4	8 16 10.22	20 29 51.2	2.0	21.6	1.63	29	7 34.1	8 5 44.45	21 2 28.2	1.8	19.3	1.46
13	10 41.0	8 15 41.81	20 31 26.0	2.0	21.6	1.63	30	7 30.2	8 5 48.82	21 2 13.5	1.8	19.3	1.46
14	10 36.6	8 15 13.86	+20 32 58.8	2.0	21.6	1.62	31	7 26.4	8 5 53.97	+21 1 56.5	1.8	19.2	1.45
15	10 32.2	8 14 46.41	+20 34 29.5	2.0	21.5	1.62	Apr. 1	7 22.6	8 5 59.89	+21 1 37.1	1.8	19.1	1.45

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T.of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T.of Sem. Pass. Mer.
Apr. 1	h m	h m s	° ' "	"	"	"	Nov. 16	h m	h m s	° ' "	"	"	"
2	7 22.6	8 59.89	+21 1 37.1	1.8	19.1	1.45	17	18 52.0	10 40 8.45	+9 27 25.4	1.6	17.1	1.23
3	7 18.8	8 6 6.58	21 1 15.4	1.8	19.0	1.45	18	18 48.4	10 40 33.51	9 25 10.9	1.6	17.1	1.23
4	7 14.9	8 6 14.05	21 0 51.3	1.8	18.9	1.44	19	18 44.9	10 40 58.01	9 22 59.7	1.6	17.2	1.24
5	7 11.1	8 6 22.28	21 0 24.8	1.8	18.9	1.44	20	18 41.4	10 41 21.95	9 20 51.9	1.6	17.2	1.24
6	7 7.4	8 6 31.27	20 59 56.0	1.8	18.8	1.44	21	18 37.8	10 41 45.32	9 18 47.5	1.6	17.3	1.25
7	7 3.6	8 6 41.03	+20 59 25.0	1.8	18.8	1.43	22	18 34.3	10 42 8.12	+9 16 46.4	1.6	17.3	1.25
8	6 59.9	8 6 51.54	20 58 51.7	1.8	18.7	1.43	23	18 30.7	10 42 30.34	9 14 48.7	1.6	17.4	1.25
9	6 56.1	8 7 2.82	20 58 16.1	1.8	18.7	1.42	24	18 27.2	10 42 51.97	9 12 54.6	1.6	17.4	1.25
10	6 52.4	8 7 14.84	20 57 38.0	1.8	18.6	1.42	25	18 23.6	10 43 13.01	9 11 4.1	1.7	17.5	1.26
11	6 48.7	8 7 27.60	20 56 57.7	1.8	18.6	1.41	26	18 20.0	10 43 33.45	9 9 17.3	1.7	17.5	1.26
12	6 44.9	8 7 41.08	+20 56 15.1	1.8	18.5	1.41	27	18 16.4	10 43 53.29	+9 7 34.2	1.7	17.6	1.26
13	6 41.2	8 7 55.31	20 55 30.1	1.8	18.4	1.40	28	18 12.8	10 44 12.51	9 5 54.8	1.7	17.6	1.26
14	6 37.6	8 8 10.24	20 54 42.9	1.7	18.4	1.40	29	18 9.2	10 44 31.12	9 4 19.0	1.7	17.7	1.26
15	6 33.9	8 8 25.89	20 53 53.5	1.7	18.3	1.39	30	18 5.5	10 44 49.11	9 2 46.9	1.7	17.7	1.27
16	6 30.2	8 8 42.27	20 53 1.7	1.7	18.3	1.39	Dec. 1	18 1.9	10 45 6.45	9 1 18.8	1.7	17.8	1.27
17	6 26.6	8 8 59.35	+20 52 7.7	1.7	18.2	1.38	2	17 58.2	10 45 23.15	+8 59 54.6	1.7	17.8	1.28
18	6 22.9	8 9 17.11	20 51 11.5	1.7	18.2	1.38	3	17 54.6	10 45 39.21	8 58 34.3	1.7	17.9	1.28
19	6 19.3	8 9 35.57	20 50 13.1	1.7	18.1	1.38	4	17 50.9	10 45 54.62	8 57 18.1	1.7	17.9	1.29
20	6 15.7	8 9 54.71	20 49 12.4	1.7	18.1	1.37	5	17 47.2	10 46 9.37	8 56 5.8	1.7	18.0	1.29
21	6 12.1	8 10 14.52	20 48 9.6	1.7	18.0	1.37	6	17 43.5	10 46 23.47	8 54 57.5	1.7	18.0	1.29
22	6 8.5	8 10 35.00	+20 47 4.5	1.7	18.0	1.37	7	17 39.8	10 46 36.90	+8 53 53.4	1.7	18.1	1.30
23	6 4.9	8 10 56.13	20 45 57.2	1.7	17.9	1.36	8	17 36.1	10 46 49.66	8 52 53.3	1.7	18.2	1.30
24	6 1.3	8 11 17.92	20 44 47.9	1.7	17.9	1.36	9	17 32.3	10 47 1.74	8 51 57.3	1.7	18.2	1.30
25	5 57.8	8 11 40.34	20 43 36.3	1.7	17.8	1.35	10	17 28.6	10 47 13.13	8 51 5.5	1.7	18.3	1.31
26	5 54.2	8 12 3.39	20 42 22.7	1.7	17.8	1.35	11	17 24.8	10 47 23.84	8 50 18.0	1.7	18.4	1.31
27	5 50.7	8 12 27.08	+20 41 6.9	1.7	17.8	1.34	12	17 21.1	10 47 33.88	+8 49 34.6	1.7	18.4	1.32
28	5 47.2	8 12 51.39	20 39 48.9	1.7	17.8	1.34	13	17 17.3	10 47 43.22	8 48 55.4	1.7	18.5	1.32
29	5 43.7	8 13 16.31	20 38 28.9	1.7	17.7	1.34	14	17 13.5	10 47 51.87	8 48 20.5	1.7	18.5	1.33
30	5 40.2	8 13 41.82	20 37 6.7	1.6	17.7	1.33	15	17 9.7	10 47 59.82	8 47 49.8	1.7	18.6	1.33
Nov. 1	19 43.7	10 32 50.16	+10 7 8.7	1.6	16.5	1.19	16	17 5.9	10 48 7.08	8 47 23.4	1.7	18.6	1.34
2	19 40.3	10 33 22.81	10 4 10.0	1.6	16.5	1.19	17	17 2.1	10 48 13.64	+8 47 1.2	1.8	18.7	1.34
3	19 36.9	10 33 55.00	10 1 14.0	1.6	16.5	1.19	18	16 58.2	10 48 19.48	8 46 43.3	1.8	18.7	1.35
4	19 33.5	10 34 26.72	9 58 20.7	1.6	16.6	1.19	19	16 54.4	10 48 24.61	8 46 29.8	1.8	18.8	1.35
5	19 30.1	10 34 57.97	9 55 30.0	1.6	16.6	1.20	20	16 50.6	10 48 29.04	8 46 20.6	1.8	18.8	1.36
6	19 26.6	10 35 28.75	+9 52 42.1	1.6	16.6	1.20	21	16 46.7	10 48 32.75	8 46 15.7	1.8	18.9	1.36
7	19 23.2	10 35 59.03	9 49 57.0	1.6	16.7	1.20	22	16 42.8	10 48 35.75	+8 46 15.2	1.8	18.9	1.36
8	19 19.8	10 36 28.81	9 47 14.9	1.6	16.7	1.20	23	16 38.9	10 48 38.03	8 46 19.1	1.8	19.0	1.37
9	19 16.3	10 36 58.09	9 44 35.5	1.6	16.7	1.21	24	16 35.0	10 48 39.60	8 46 27.4	1.8	19.1	1.37
10	19 12.9	10 37 26.86	9 41 59.2	1.6	16.8	1.21	25	16 31.1	10 48 40.44	8 46 40.0	1.8	19.1	1.37
11	19 9.4	10 37 55.11	+9 39 25.9	1.6	16.8	1.21	26	16 27.2	10 48 40.55	8 46 57.0	1.8	19.2	1.38
12	19 5.9	10 38 22.84	9 36 55.6	1.6	16.9	1.22	27	16 23.2	10 48 39.94	+8 47 18.4	1.8	19.3	1.38
13	19 2.5	10 38 50.05	9 34 28.2	1.6	16.9	1.22	28	16 19.3	10 48 38.60	8 47 44.3	1.8	19.3	1.38
14	18 59.0	10 39 16.72	9 32 4.1	1.6	17.0	1.22	29	16 15.3	10 48 36.52	8 48 14.5	1.8	19.4	1.39
15	18 55.4	10 39 42.85	9 29 43.2	1.6	17.0	1.22	30	16 11.3	10 48 33.72	8 48 40.1	1.8	19.4	1.39
16	18 52.0	10 40 8.45	+9 27 25.4	1.6	17.1	1.23	31	16 7.3	10 48 30.19	8 48 28.2	1.8	19.5	1.40
17	18 48.4	10 40 33.51	+9 25 10.9	1.6	17.1	1.23	32	16 3.3	10 48 25.94	+8 50 11.7	1.8	19.5	1.40
								15 59.3	10 48 20.95	+8 50 59.6	1.9	19.6	1.40

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Feb. 1	18 18.5	15 7 11.93	15 7 51.5	0.9	7.9	0.58	Mar. 17	15 22.4	15 8 0.68	15 1 29.4	1.0	8.5	0.62
2	18 14.8	15 7 21.84	15 8 19.1	0.9	7.9	0.58	18	15 18.3	15 7 52.66	15 0 45.5	1.0	8.5	0.62
3	18 11.0	15 7 31.38	15 8 45.0	0.9	7.9	0.58	19	15 14.3	15 7 44.28	15 0 0.3	1.0	8.5	0.62
4	18 7.2	15 7 40.53	15 9 9.4	0.9	7.9	0.58	20	15 10.2	15 7 35.55	14 59 13.8	1.0	8.6	0.62
5	18 3.4	15 7 49.29	15 9 32.1	0.9	7.9	0.58	21	15 6.1	15 7 26.47	14 58 26.0	1.0	8.6	0.63
6	17 59.6	15 7 57.66	15 9 53.1	0.9	7.9	0.58	22	15 2.0	15 7 17.04	14 57 36.9	1.0	8.6	0.63
7	17 55.8	15 8 5.63	15 10 12.4	0.9	7.9	0.58	23	14 57.9	15 7 7.27	14 56 46.6	1.0	8.6	0.63
8	17 52.0	15 8 13.20	15 10 30.0	0.9	7.9	0.59	24	14 53.8	15 6 57.17	14 55 55.1	1.0	8.6	0.63
9	17 48.2	15 8 20.37	15 10 45.9	0.9	8.0	0.59	25	14 49.7	15 6 46.74	14 55 2.4	1.0	8.6	0.63
10	17 44.4	15 8 27.15	15 11 0.2	0.9	8.0	0.59	26	14 45.6	15 6 35.98	14 54 8.5	1.0	8.6	0.63
11	17 40.6	15 8 33.53	15 11 12.7	0.9	8.0	0.59	27	14 41.5	15 6 24.90	14 53 13.5	1.0	8.6	0.63
12	17 36.7	15 8 39.50	15 11 23.5	0.9	8.0	0.59	28	14 37.4	15 6 13.52	14 52 17.3	1.0	8.6	0.64
13	17 32.9	15 8 45.05	15 11 32.7	0.9	8.0	0.59	29	14 33.2	15 6 1.83	14 51 20.1	1.0	8.6	0.64
14	17 29.1	15 8 50.20	15 11 40.1	0.9	8.0	0.59	30	14 29.1	15 5 49.82	14 50 21.7	1.0	8.6	0.64
15	17 25.2	15 8 54.95	15 11 45.9	0.9	8.0	0.59	31	14 25.0	15 5 37.52	14 49 22.4	1.0	8.6	0.64
16	17 21.3	15 8 59.29	15 11 50.0	0.9	8.0	0.60	Apr. 1	14 20.8	15 5 24.93	14 48 22.0	1.0	8.6	0.64
17	17 17.5	15 9 3.21	15 11 52.5	0.9	8.1	0.60	2	14 16.7	15 5 12.06	14 47 20.6	1.0	8.6	0.64
18	17 13.6	15 9 6.73	15 11 53.3	0.9	8.1	0.60	3	14 12.6	15 4 58.91	14 46 18.2	1.0	8.6	0.64
19	17 9.7	15 9 9.83	15 11 52.4	0.9	8.1	0.60	4	14 8.4	15 4 45.49	14 45 14.8	1.0	8.7	0.64
20	17 5.8	15 9 12.52	15 11 49.9	0.9	8.1	0.60	5	14 4.2	15 4 31.81	14 44 10.6	1.0	8.7	0.64
21	17 1.9	15 9 14.81	15 11 45.7	0.9	8.1	0.60	6	14 0.1	15 4 17.86	14 43 5.4	1.0	8.7	0.64
22	16 58.0	15 9 16.68	15 11 40.0	0.9	8.1	0.60	7	13 55.9	15 4 3.65	14 41 59.4	1.0	8.7	0.64
23	16 54.1	15 9 18.14	15 11 32.6	0.9	8.1	0.60	8	13 51.7	15 3 49.21	14 40 52.4	1.0	8.7	0.64
24	16 50.2	15 9 19.20	15 11 23.5	0.9	8.2	0.60	9	13 47.5	15 3 34.52	14 39 44.8	1.0	8.7	0.64
25	16 46.3	15 9 19.85	15 11 12.8	0.9	8.2	0.61	10	13 43.4	15 3 19.61	14 38 36.4	1.0	8.7	0.64
26	16 42.4	15 9 20.08	15 11 0.5	0.9	8.2	0.61	11	13 39.2	15 3 4.48	14 37 27.2	1.0	8.7	0.64
27	16 38.4	15 9 19.91	15 10 46.6	0.9	8.2	0.61	12	13 35.0	15 2 49.13	14 36 17.4	1.0	8.7	0.64
28	16 34.5	15 9 19.33	15 10 31.1	0.9	8.2	0.61	13	13 30.8	15 2 33.58	14 35 6.9	1.0	8.7	0.64
29	16 30.5	15 9 18.34	15 10 14.0	0.9	8.2	0.61	14	13 26.6	15 2 17.84	14 33 55.8	1.0	8.7	0.64
Mar. 1	16 26.6	15 9 16.95	15 9 55.4	0.9	8.3	0.61	15	13 22.4	15 2 1.91	14 32 44.1	1.0	8.7	0.64
2	16 22.6	15 9 15.16	15 9 35.2	0.9	8.3	0.61	16	13 18.2	15 1 45.80	14 31 31.8	1.0	8.7	0.64
3	16 18.7	15 9 12.96	15 9 13.4	0.9	8.3	0.61	17	13 14.0	15 1 29.52	14 30 19.1	1.0	8.7	0.64
4	16 14.7	15 9 10.36	15 8 50.1	0.9	8.3	0.61	18	13 9.8	15 1 13.07	14 29 5.9	1.0	8.7	0.64
5	16 10.7	15 9 7.35	15 8 25.1	0.9	8.3	0.62	19	13 5.6	15 0 56.47	14 27 52.2	1.0	8.7	0.64
6	16 6.7	15 9 3.95	15 7 58.7	0.9	8.4	0.62	20	13 1.4	15 0 39.73	14 26 38.2	1.0	8.8	0.64
7	16 2.7	15 9 0.14	15 7 30.7	0.9	8.4	0.62	21	12 57.2	15 0 22.85	14 25 23.8	1.0	8.8	0.64
8	15 58.7	15 8 55.94	15 7 1.2	0.9	8.4	0.62	22	12 53.0	15 0 5.85	14 24 9.1	1.0	8.8	0.65
9	15 54.7	15 8 51.34	15 6 30.2	0.9	8.4	0.62	23	12 48.8	14 59 48.75	14 22 54.1	1.0	8.8	0.65
10	15 50.7	15 8 46.35	15 5 57.7	0.9	8.4	0.62	24	12 44.5	14 59 31.55	14 21 38.9	1.0	8.8	0.65
11	15 46.7	15 8 40.98	15 5 23.7	0.9	8.5	0.62	25	12 40.3	14 59 14.24	14 20 23.5	1.0	8.8	0.65
12	15 42.7	15 8 35.22	15 4 48.2	1.0	8.5	0.62	26	12 36.1	14 58 56.82	14 19 7.8	1.0	8.8	0.65
13	15 38.6	15 8 29.07	15 4 11.3	1.0	8.5	0.62	27	12 31.9	14 58 39.31	14 17 51.9	1.0	8.8	0.65
14	15 34.6	15 8 22.53	15 3 32.9	1.0	8.5	0.62	28	12 27.6	14 58 21.75	14 16 36.0	1.0	8.8	0.65
15	15 30.5	15 8 15.62	15 2 53.1	1.0	8.5	0.62	29	12 23.4	14 58 4.12	14 15 20.1	1.0	8.8	0.65
16	15 26.5	15 8 8.34	15 2 11.9	1.0	8.5	0.62	30	12 19.2	14 57 46.43	14 14 4.1	1.0	8.8	0.65
17	15 22.4	15 8 0.68	15 1 29.4	1.0	8.5	0.62	May 1	12 15.0	14 57 28.70	14 12 48.2	1.0	8.8	0.65
18	15 18.3	15 7 52.66	15 0 45.5	1.0	8.5	0.62	2	12 10.8	14 57 10.92	14 11 32.3	1.0	8.8	0.65

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
May 1	12 15.0	14 57 28.70	14 12 48.2	1.0	8.8	0.65	June 15	9 6.3	14 45 44.92	13 26 22.9	1.0	8.6	0.63
2	12 10.8	14 57 10.92	14 11 32.3	1.0	8.8	0.65	16	9 2.2	14 45 34.17	13 25 47.4	1.0	8.5	0.63
3	12 6.6	14 56 53.12	14 10 16.5	1.0	8.8	0.65	17	8 58.1	14 45 23.74	13 25 13.4	1.0	8.5	0.63
4	12 2.3	14 56 33.31	14 9 0.8	1.0	8.8	0.65	18	8 54.0	14 45 13.63	13 24 41.0	1.0	8.5	0.63
5	11 58.1	14 56 17.50	14 7 45.2	1.0	8.8	0.65	19	8 49.9	14 45 3.84	13 24 10.2	1.0	8.5	0.63
6	11 53.9	14 55 59.69	14 6 29.8	1.0	8.8	0.65	20	8 45.8	14 44 54.38	13 23 41.0	1.0	8.5	0.63
7	11 49.6	14 55 41.88	14 5 14.8	1.0	8.8	0.65	21	8 41.8	14 44 45.24	13 23 13.5	1.0	8.5	0.63
8	11 45.4	14 55 24.07	14 4 0.0	1.0	8.8	0.65	22	8 37.7	14 44 36.43	13 22 47.6	1.0	8.5	0.63
9	11 41.2	14 55 6.27	14 2 45.4	1.0	8.8	0.65	23	8 33.6	14 44 27.96	13 22 23.4	1.0	8.4	0.63
10	11 37.0	14 54 48.52	14 1 31.2	1.0	8.8	0.65	24	8 29.5	14 44 19.83	13 22 0.8	1.0	8.4	0.62
11	11 32.7	14 54 30.82	14 0 17.5	1.0	8.8	0.65	25	8 25.5	14 44 12.03	13 21 39.9	1.0	8.4	0.62
12	11 28.5	14 54 13.17	13 59 4.2	1.0	8.8	0.65	26	8 21.4	14 44 4.56	13 21 20.6	1.0	8.4	0.62
13	11 24.3	14 53 55.58	13 57 51.5	1.0	8.8	0.65	27	8 17.4	14 43 57.44	13 21 3.1	1.0	8.4	0.62
14	11 20.1	14 53 38.07	13 56 39.3	1.0	8.8	0.64	28	8 13.3	14 43 50.68	13 20 47.3	1.0	8.4	0.62
15	11 15.8	14 53 20.64	13 55 27.7	1.0	8.8	0.64	29	8 9.3	14 43 44.28	13 20 33.2	1.0	8.4	0.62
16	11 11.6	14 53 3.30	13 54 16.6	1.0	8.8	0.64	30	8 5.3	14 43 38.24	13 20 20.8	1.0	8.4	0.62
17	11 7.4	14 52 46.08	13 53 6.3	1.0	8.8	0.64	July 1	8 1.2	14 43 32.54	13 20 10.2	0.9	8.3	0.61
18	11 3.2	14 52 28.96	13 51 56.7	1.0	8.8	0.64	2	7 57.2	14 43 27.21	13 20 1.4	0.9	8.3	0.61
19	10 59.0	14 52 11.95	13 50 47.8	1.0	8.8	0.64	3	7 53.2	14 43 22.25	13 19 54.3	0.9	8.3	0.61
20	10 54.7	14 51 55.07	13 49 39.7	1.0	8.8	0.64	4	7 49.2	14 43 17.64	13 19 49.0	0.9	8.3	0.61
21	10 50.5	14 51 38.33	13 48 32.3	1.0	8.7	0.64	5	7 45.2	14 43 13.40	13 19 45.5	0.9	8.3	0.61
22	10 46.3	14 51 21.74	13 47 25.9	1.0	8.7	0.64	6	7 41.2	14 43 9.54	13 19 43.8	0.9	8.3	0.61
23	10 42.1	14 51 5.30	13 46 20.3	1.0	8.7	0.64	7	7 37.2	14 43 6.05	13 19 43.9	0.9	8.3	0.61
24	10 37.9	14 50 49.01	13 45 15.6	1.0	8.7	0.64	8	7 33.2	14 43 2.93	13 19 45.8	0.9	8.3	0.61
25	10 33.7	14 50 32.87	13 44 11.9	1.0	8.7	0.64	9	7 29.2	14 43 0.19	13 19 49.5	0.9	8.3	0.61
26	10 29.5	14 50 16.92	13 43 9.0	1.0	8.7	0.64	10	7 25.3	14 42 57.83	13 19 55.0	0.9	8.2	0.60
27	10 25.3	14 50 1.16	13 42 7.2	1.0	8.7	0.64	11	7 21.3	14 42 55.84	13 20 2.3	0.9	8.2	0.60
28	10 21.1	14 49 45.58	13 41 6.4	1.0	8.7	0.64	12	7 17.4	14 42 54.23	13 20 11.3	0.9	8.2	0.60
29	10 16.9	14 49 30.19	13 40 6.6	1.0	8.7	0.64	13	7 13.4	14 42 53.01	13 20 22.2	0.9	8.2	0.60
30	10 12.7	14 49 14.99	13 39 7.9	1.0	8.7	0.64	14	7 9.5	14 42 52.16	13 20 34.9	0.9	8.2	0.60
31	10 8.6	14 49 0.00	13 38 10.3	1.0	8.7	0.64	15	7 5.5	14 42 51.69	13 20 49.4	0.9	8.2	0.60
June 1	10 4.4	14 48 45.24	13 37 14.0	1.0	8.7	0.64	16	7 1.6	14 42 51.61	13 21 5.7	0.9	8.2	0.60
2	10 0.2	14 48 30.71	13 36 18.9	1.0	8.7	0.64	17	6 57.6	14 42 51.92	13 21 23.7	0.9	8.2	0.60
3	9 56.0	14 48 16.39	13 35 25.0	1.0	8.7	0.64	18	6 53.7	14 42 52.61	13 21 43.6	0.9	8.1	0.60
4	9 51.9	14 48 2.31	13 34 32.3	1.0	8.7	0.64	19	6 49.8	14 42 53.68	13 22 5.2	0.9	8.1	0.60
5	9 47.7	14 47 48.48	13 33 40.8	1.0	8.7	0.64	20	6 45.9	14 42 55.12	13 22 28.6	0.9	8.1	0.60
6	9 43.6	14 47 34.90	13 32 50.7	1.0	8.7	0.64	21	6 42.0	14 42 56.94	13 22 53.7	0.9	8.1	0.60
7	9 39.4	14 47 21.58	13 32 1.9	1.0	8.6	0.64	22	6 38.1	14 42 59.14	13 23 20.5	0.9	8.1	0.60
8	9 35.2	14 47 8.51	13 31 14.5	1.0	8.6	0.63	23	6 34.2	14 43 1.73	13 23 49.2	0.9	8.1	0.60
9	9 31.1	14 46 55.71	13 30 28.5	1.0	8.6	0.63	24	6 30.3	14 43 4.70	13 24 19.6	0.9	8.1	0.60
10	9 27.0	14 46 43.18	13 29 43.8	1.0	8.6	0.63	25	6 26.5	14 43 8.03	13 24 51.7	0.9	8.1	0.59
11	9 22.8	14 46 30.95	13 29 0.6	1.0	8.6	0.63	26	6 22.6	14 43 11.74	13 25 25.5	0.9	8.0	0.59
12	9 18.7	14 46 19.00	13 28 19.0	1.0	8.6	0.63	27	6 18.7	14 43 15.83	13 26 1.0	0.9	8.0	0.59
13	9 14.6	14 46 7.34	13 27 38.8	1.0	8.6	0.63	28	6 14.9	14 43 20.29	13 26 38.2	0.9	8.0	0.59
14	9 10.5	14 45 55.98	13 27 0.1	1.0	8.6	0.63	29	6 11.0	14 43 25.13	13 27 17.1	0.9	8.0	0.59
15	9 6.3	14 45 44.92	13 26 22.9	1.0	8.6	0.63	30	6 7.2	14 43 30.34	13 27 57.7	0.9	8.0	0.59
16	9 2.2	14 45 34.17	13 25 47.4	1.0	8.5	0.63	31	6 3.4	14 43 35.93	13 28 40.0	0.9	8.0	0.59

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pasa. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pasa. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Feb. 1	18 38.9	15 27 39.18	18 33 18.7	0.5	1.8	0.12	Mar. 17	15 42.5	15 28 9.81	18 34 51.7	0.5	1.8	0.13
2	18 35.1	15 27 44.69	18 33 38.1	0.5	1.8	0.12	18	15 38.5	15 28 5.56	18 34 36.1	0.5	1.9	0.13
3	18 31.2	15 27 49.99	18 33 56.8	0.5	1.8	0.12	19	15 34.5	15 28 1.12	18 34 19.8	0.5	1.9	0.13
4	18 27.4	15 27 55.06	18 34 14.7	0.5	1.8	0.12	20	15 30.5	15 27 56.48	18 34 3.0	0.5	1.9	0.13
5	18 23.5	15 27 59.93	18 34 31.8	0.5	1.8	0.13	21	15 26.5	15 27 51.66	18 33 45.4	0.5	1.9	0.13
6	18 19.7	15 28 4.57	18 34 48.1	0.5	1.8	0.13	22	15 22.4	15 27 46.66	18 33 27.2	0.5	1.9	0.13
7	18 15.8	15 28 9.00	18 35 3.5	0.5	1.8	0.13	23	15 18.4	15 27 41.46	18 33 8.4	0.5	1.9	0.13
8	18 12.0	15 28 13.20	18 35 18.2	0.5	1.8	0.13	24	15 14.4	15 27 36.09	18 32 48.9	0.5	1.9	0.13
9	18 8.1	15 28 17.18	18 35 32.1	0.5	1.8	0.13	25	15 10.4	15 27 30.54	18 32 28.7	0.5	1.9	0.13
10	18 4.2	15 28 20.95	18 35 45.2	0.5	1.8	0.13	26	15 6.4	15 27 24.80	18 32 7.7	0.5	1.9	0.13
11	18 0.4	15 28 24.50	18 35 57.5	0.5	1.8	0.13	27	15 2.3	15 27 18.90	18 31 46.2	0.5	1.9	0.13
12	17 56.5	15 28 27.82	18 36 9.0	0.5	1.8	0.13	28	14 58.3	15 27 12.82	18 31 24.1	0.5	1.9	0.13
13	17 52.6	15 28 30.92	18 36 19.7	0.5	1.8	0.13	29	14 54.3	15 27 6.58	18 31 1.4	0.5	1.9	0.13
14	17 48.7	15 28 33.80	18 36 29.6	0.5	1.8	0.13	30	14 50.3	15 27 0.16	18 30 38.1	0.5	1.9	0.13
15	17 44.8	15 28 36.47	18 36 38.7	0.5	1.8	0.13	31	14 46.2	15 26 53.57	18 30 14.2	0.5	1.9	0.13
16	17 40.9	15 28 38.90	18 36 47.0	0.5	1.8	0.13	Apr. 1	14 42.1	15 26 46.83	18 29 49.7	0.5	1.9	0.13
17	17 37.0	15 28 41.10	18 36 54.6	0.5	1.8	0.13	2	14 38.1	15 26 39.92	18 29 24.5	0.5	1.9	0.13
18	17 33.1	15 28 43.10	18 37 1.3	0.5	1.8	0.13	3	14 34.0	15 26 32.86	18 28 58.8	0.5	1.9	0.13
19	17 29.2	15 28 44.87	18 37 7.1	0.5	1.8	0.13	4	14 30.0	15 26 25.65	18 28 32.5	0.5	1.9	0.13
20	17 25.3	15 28 46.41	18 37 12.2	0.5	1.8	0.13	5	14 25.9	15 26 18.29	18 28 5.6	0.5	1.9	0.13
21	17 21.4	15 28 47.73	18 37 16.6	0.5	1.8	0.13	6	14 21.9	15 26 10.78	18 27 38.3	0.5	1.9	0.13
22	17 17.5	15 28 48.83	18 37 20.1	0.5	1.8	0.13	7	14 17.8	15 26 3.12	18 27 10.4	0.5	1.9	0.13
23	17 13.6	15 28 49.71	18 37 22.8	0.5	1.8	0.13	8	14 13.8	15 25 55.32	18 26 42.1	0.5	1.9	0.13
24	17 9.7	15 28 50.37	18 37 24.7	0.5	1.8	0.13	9	14 9.7	15 25 47.39	18 26 13.2	0.5	1.9	0.13
25	17 5.8	15 28 50.81	18 37 25.8	0.5	1.8	0.13	10	14 5.6	15 25 39.33	18 25 43.7	0.5	1.9	0.13
26	17 1.8	15 28 51.01	18 37 26.1	0.5	1.8	0.13	11	14 1.6	15 25 31.14	18 25 13.8	0.5	1.9	0.13
27	16 57.9	15 28 51.00	18 37 25.7	0.5	1.8	0.13	12	13 57.5	15 25 22.82	18 24 43.4	0.5	1.9	0.13
28	16 54.0	15 28 50.76	18 37 24.5	0.5	1.8	0.13	13	13 53.4	15 25 14.38	18 24 12.6	0.5	1.9	0.13
29	16 50.0	15 28 50.31	18 37 22.5	0.5	1.8	0.13	14	13 49.4	15 25 5.81	18 23 41.3	0.5	1.9	0.13
Mar. 1	16 46.1	15 28 49.64	18 37 19.7	0.5	1.8	0.13	15	13 45.3	15 24 57.12	18 23 9.5	0.5	1.9	0.13
2	16 42.1	15 28 48.76	18 37 16.2	0.5	1.8	0.13	16	13 41.2	15 24 48.33	18 22 37.4	0.5	1.9	0.13
3	16 38.2	15 28 47.65	18 37 11.9	0.5	1.8	0.13	17	13 37.1	15 24 39.44	18 22 5.0	0.5	1.9	0.13
4	16 34.2	15 28 46.33	18 37 6.8	0.5	1.8	0.13	18	13 33.0	15 24 30.45	18 21 32.2	0.5	1.9	0.13
5	16 30.3	15 28 44.79	18 37 0.9	0.5	1.8	0.13	19	13 29.0	15 24 21.35	18 20 59.0	0.5	1.9	0.13
6	16 26.3	15 28 43.03	18 36 54.3	0.5	1.8	0.13	20	13 24.9	15 24 12.16	18 20 25.3	0.5	1.9	0.13
7	16 22.3	15 28 41.06	18 36 46.9	0.5	1.8	0.13	21	13 20.8	15 24 2.88	18 19 51.4	0.5	1.9	0.13
8	16 18.4	15 28 38.88	18 36 38.7	0.5	1.8	0.13	22	13 16.7	15 23 53.52	18 19 17.2	0.5	1.9	0.13
9	16 14.4	15 28 36.48	18 36 29.8	0.5	1.8	0.13	23	13 12.6	15 23 44.08	18 18 42.6	0.5	1.9	0.13
10	16 10.4	15 28 33.87	18 36 20.1	0.5	1.8	0.13	24	13 8.5	15 23 34.55	18 18 7.7	0.5	1.9	0.13
11	16 6.5	15 28 31.05	18 36 9.6	0.5	1.8	0.13	25	13 4.4	15 23 24.96	18 17 32.5	0.5	1.9	0.13
12	16 2.5	15 28 28.03	18 35 58.4	0.5	1.8	0.13	26	13 0.3	15 23 15.29	18 16 57.0	0.5	1.9	0.13
13	15 58.5	15 28 24.80	18 35 46.5	0.5	1.8	0.13	27	12 56.2	15 23 5.56	18 16 21.3	0.5	1.9	0.13
14	15 54.5	15 28 21.36	18 35 33.8	0.5	1.8	0.13	28	12 52.1	15 22 55.76	18 15 45.4	0.5	1.9	0.13
15	15 50.5	15 28 17.71	18 35 20.5	0.5	1.8	0.13	29	12 48.0	15 22 45.91	18 15 9.2	0.5	1.9	0.13
16	15 46.5	15 28 13.86	18 35 6.5	0.5	1.8	0.13	30	12 43.9	15 22 36.01	18 14 32.7	0.5	1.9	0.13
17	15 42.5	15 28 9.81	18 34 51.7	0.5	1.8	0.13	May 1	12 39.8	15 22 26.05	18 13 56.0	0.5	1.9	0.13
18	15 38.5	15 28 5.56	18 34 36.1	0.5	1.9	0.13	2	12 35.8	15 22 16.05	18 13 19.2	0.5	1.9	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
May 1	12 39.8	15 22 26.05	-18 13 56.0	0.5	1.9	0.13	June 15	9 35.8	15 15 15.54	-17 47 15.5	0.5	1.9	0.13
2	12 35.8	15 22 16.05	18 13 19.2	0.5	1.9	0.13	16	9 31.7	15 15 7.82	17 46 46.7	0.5	1.9	0.13
3	12 31.7	15 22 6.01	18 12 42.3	0.5	1.9	0.13	17	9 27.6	15 15 0.23	17 46 18.4	0.5	1.9	0.13
4	12 27.6	15 21 55.93	18 12 5.1	0.5	1.9	0.13	18	9 23.6	15 14 52.78	17 45 50.6	0.5	1.9	0.13
5	12 23.5	15 21 45.82	18 11 27.7	0.5	1.9	0.13	19	9 19.5	15 14 45.47	17 45 23.4	0.5	1.9	0.13
6	12 19.4	15 21 35.67	-18 10 50.2	0.5	1.9	0.13	20	9 15.5	15 14 38.31	-17 44 56.7	0.5	1.9	0.13
7	12 15.3	15 21 25.51	18 10 12.6	0.5	1.9	0.13	21	9 11.4	15 14 31.30	17 44 30.7	0.5	1.9	0.13
8	12 11.2	15 21 15.32	18 9 35.0	0.5	1.9	0.13	22	9 7.4	15 14 24.44	17 44 5.2	0.5	1.9	0.13
9	12 7.1	15 21 5.12	18 8 57.3	0.5	1.9	0.13	23	9 3.4	15 14 17.73	17 43 40.3	0.5	1.9	0.13
10	12 3.0	15 20 54.90	18 8 19.5	0.5	1.9	0.13	24	8 59.3	15 14 11.18	17 43 16.0	0.5	1.9	0.13
11	11 58.8	15 20 44.68	-18 7 41.7	0.5	1.9	0.13	25	8 55.3	15 14 4.78	-17 42 52.3	0.5	1.9	0.13
12	11 54.7	15 20 34.46	18 7 3.9	0.5	1.9	0.13	26	8 51.2	15 13 58.54	17 42 29.1	0.5	1.9	0.13
13	11 50.6	15 20 24.24	18 6 26.0	0.5	1.9	0.13	27	8 47.2	15 13 52.47	17 42 6.6	0.5	1.9	0.13
14	11 46.5	15 20 14.02	18 5 48.2	0.5	1.9	0.13	28	8 43.2	15 13 46.57	17 41 44.8	0.5	1.9	0.13
15	11 42.4	15 20 3.81	18 5 10.3	0.5	1.9	0.13	29	8 39.1	15 13 40.83	17 41 23.7	0.5	1.9	0.13
16	11 38.3	15 19 53.63	-18 4 32.5	0.5	1.9	0.13	30	8 35.1	15 13 35.25	-17 41 3.2	0.5	1.9	0.13
17	11 34.2	15 19 43.47	18 4 3.7	0.5	1.9	0.13	July 1	8 31.1	15 13 29.85	17 40 43.4	0.5	1.9	0.13
18	11 30.1	15 19 33.33	18 3 17.0	0.5	1.9	0.13	2	8 27.1	15 13 24.63	17 40 24.3	0.5	1.9	0.13
19	11 26.0	15 19 23.22	18 2 39.4	0.5	1.9	0.13	3	8 23.1	15 13 19.59	17 40 5.8	0.5	1.9	0.13
20	11 21.9	15 19 13.15	18 2 2.0	0.5	1.9	0.13	4	8 19.0	15 13 14.72	17 39 48.1	0.5	1.9	0.13
21	11 17.8	15 19 3.11	-18 1 24.6	0.5	1.9	0.13	5	8 15.0	15 13 10.03	-17 39 31.0	0.5	1.8	0.13
22	11 13.7	15 18 53.12	18 0 47.4	0.5	1.9	0.13	6	8 11.0	15 13 5.53	17 39 14.7	0.5	1.8	0.13
23	11 9.6	15 18 43.17	18 0 10.3	0.5	1.9	0.13	7	8 7.0	15 13 1.21	17 38 59.1	0.5	1.8	0.13
24	11 5.6	15 18 33.26	17 59 33.5	0.5	1.9	0.13	8	8 3.0	15 12 57.07	17 38 44.2	0.5	1.8	0.13
25	11 1.5	15 18 23.41	17 58 56.8	0.5	1.9	0.13	9	7 59.0	15 12 53.13	17 38 30.1	0.5	1.8	0.13
26	10 57.4	15 18 13.61	-17 58 20.4	0.5	1.9	0.13	10	7 55.0	15 12 49.37	-17 38 16.8	0.5	1.8	0.13
27	10 53.3	15 18 3.87	17 57 44.1	0.5	1.9	0.13	11	7 51.1	15 12 45.80	17 38 4.2	0.5	1.8	0.13
28	10 49.2	15 17 54.21	17 57 8.1	0.5	1.9	0.13	12	7 47.1	15 12 42.42	17 37 52.4	0.5	1.8	0.13
29	10 45.1	15 17 44.61	17 56 32.3	0.5	1.9	0.13	13	7 43.1	15 12 39.24	17 37 41.3	0.5	1.8	0.13
30	10 41.0	15 17 35.07	17 55 56.7	0.5	1.9	0.13	14	7 39.1	15 12 36.27	17 37 31.0	0.5	1.8	0.13
31	10 36.9	15 17 25.62	-17 55 21.4	0.5	1.9	0.13	15	7 35.1	15 12 33.50	-17 37 21.5	0.5	1.8	0.13
June 1	10 32.8	15 17 16.25	17 54 46.4	0.5	1.9	0.13	16	7 31.2	15 12 30.92	17 37 12.8	0.5	1.8	0.13
2	10 28.7	15 17 6.97	17 54 11.7	0.5	1.9	0.13	17	7 27.2	15 12 28.54	17 37 4.8	0.5	1.8	0.13
3	10 24.6	15 16 57.76	17 53 37.3	0.5	1.9	0.13	18	7 23.2	15 12 26.36	17 36 57.6	0.5	1.8	0.13
4	10 20.6	15 16 48.65	17 53 3.2	0.5	1.9	0.13	19	7 19.2	15 12 24.38	17 36 51.2	0.5	1.8	0.13
5	10 16.5	15 16 39.64	-17 52 29.5	0.5	1.9	0.13	20	7 15.3	15 12 22.60	-17 36 45.7	0.5	1.8	0.13
6	10 12.4	15 16 30.73	17 51 56.2	0.5	1.9	0.13	21	7 11.3	15 12 21.02	17 36 40.9	0.5	1.8	0.13
7	10 8.3	15 16 21.92	17 51 23.3	0.5	1.9	0.13	22	7 7.4	15 12 19.64	17 36 36.9	0.5	1.8	0.13
8	10 4.2	15 16 13.21	17 50 50.8	0.5	1.9	0.13	23	7 3.4	15 12 18.47	17 36 33.7	0.5	1.8	0.13
9	10 0.2	15 16 4.61	17 50 18.7	0.5	1.9	0.13	24	6 59.5	15 12 17.51	17 36 31.4	0.5	1.8	0.13
10	9 56.1	15 15 56.12	-17 49 47.0	0.5	1.9	0.13	25	6 55.5	15 12 16.75	-17 36 29.9	0.5	1.8	0.13
11	9 52.0	15 15 47.75	17 49 15.7	0.5	1.9	0.13	26	6 51.6	15 12 16.20	17 36 29.2	0.5	1.8	0.13
12	9 48.0	15 15 39.51	17 48 44.9	0.5	1.9	0.13	27	6 47.6	15 12 15.86	17 36 29.3	0.5	1.8	0.13
13	9 43.9	15 15 31.39	17 48 14.6	0.5	1.9	0.13	28	6 43.7	15 12 15.72	17 36 30.2	0.5	1.8	0.13
14	9 39.8	15 15 23.40	17 47 44.8	0.5	1.9	0.13	29	6 39.8	15 12 15.78	17 36 31.9	0.5	1.8	0.13
15	9 35.8	15 15 15.54	-17 47 15.5	0.5	1.9	0.13	30	6 35.8	15 12 16.05	-17 36 34.5	0.5	1.8	0.13
16	9 31.7	15 15 7.82	17 46 46.7	0.5	1.9	0.13	31	6 31.9	15 12 16.53	-17 36 37.9	0.5	1.8	0.13

PART III



PHENOMENA

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi- diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	16 31.7	5 18 9.11	+21 40 48.7	0.3	1.3	0.09	Nov. 16	13 27.6	5 14 55.40	+21 36 5.3	0.3	1.3	0.10
2	16 27.8	5 18 7.68	21 40 44.9	0.3	1.3	0.09	17	13 23.6	5 14 48.89	21 35 57.4	0.3	1.3	0.10
3	16 23.8	5 18 6.11	21 40 41.0	0.3	1.3	0.09	18	13 19.6	5 14 42.33	21 35 49.4	0.3	1.3	0.10
4	16 19.9	5 18 4.41	21 40 37.0	0.3	1.3	0.09	19	13 15.5	5 14 35.70	21 35 41.4	0.3	1.3	0.10
5	16 15.9	5 18 2.55	21 40 32.8	0.3	1.3	0.09	20	13 11.5	5 14 29.01	21 35 33.4	0.3	1.3	0.10
6	16 11.9	5 18 0.55	+21 40 28.5	0.3	1.3	0.09	21	13 7.4	5 14 22.26	+21 35 25.3	0.3	1.3	0.10
7	16 8.0	5 17 58.43	21 40 24.0	0.3	1.3	0.09	22	13 3.4	5 14 15.44	21 35 17.2	0.3	1.3	0.10
8	16 4.0	5 17 56.16	21 40 19.4	0.3	1.3	0.09	23	12 59.3	5 14 8.59	21 35 9.1	0.3	1.3	0.10
9	16 0.0	5 17 53.76	21 40 14.7	0.3	1.3	0.09	24	12 55.3	5 14 1.69	21 35 1.0	0.3	1.3	0.10
10	15 56.0	5 17 51.22	21 40 9.9	0.3	1.3	0.09	25	12 51.2	5 13 54.75	21 34 52.9	0.3	1.3	0.10
11	15 52.1	5 17 48.55	+21 40 5.0	0.3	1.3	0.09	26	12 47.2	5 13 47.77	+21 34 44.9	0.3	1.3	0.10
12	15 48.1	5 17 45.75	21 39 59.9	0.3	1.3	0.09	27	12 43.1	5 13 40.75	21 34 36.9	0.3	1.3	0.10
13	15 44.1	5 17 42.80	21 39 54.8	0.3	1.3	0.09	28	12 39.1	5 13 33.69	21 34 28.8	0.3	1.3	0.10
14	15 40.1	5 17 39.74	21 39 49.5	0.3	1.3	0.09	29	12 35.0	5 13 26.60	21 34 20.6	0.3	1.3	0.10
15	15 36.1	5 17 36.56	21 39 44.1	0.3	1.3	0.09	30	12 31.0	5 13 19.46	21 34 12.4	0.3	1.3	0.10
16	15 32.1	5 17 33.24	+21 39 38.7	0.3	1.3	0.09	Dec. 1	12 26.9	5 13 12.29	+21 34 4.2	0.3	1.3	0.10
17	15 28.1	5 17 29.79	21 39 33.1	0.3	1.3	0.09	2	12 22.9	5 13 5.11	21 33 56.1	0.3	1.3	0.10
18	15 24.2	5 17 26.21	21 39 27.4	0.3	1.3	0.09	3	12 18.8	5 12 57.92	21 33 48.0	0.3	1.3	0.10
19	15 20.2	5 17 22.52	21 39 21.6	0.3	1.3	0.09	4	12 14.8	5 12 50.70	21 33 39.9	0.3	1.3	0.10
20	15 16.2	5 17 18.70	21 39 15.7	0.3	1.3	0.09	5	12 10.7	5 12 43.47	21 33 31.9	0.3	1.3	0.10
21	15 12.2	5 17 14.75	+21 39 9.6	0.3	1.3	0.09	6	12 6.7	5 12 36.22	+21 33 23.8	0.3	1.3	0.10
22	15 8.2	5 17 10.69	21 39 3.5	0.3	1.3	0.09	7	12 2.6	5 12 28.96	21 33 15.7	0.3	1.3	0.10
23	15 4.2	5 17 6.51	21 38 57.4	0.3	1.3	0.09	8	11 58.6	5 12 21.68	21 33 7.7	0.3	1.3	0.10
24	15 0.2	5 17 2.22	21 38 51.1	0.3	1.3	0.09	9	11 54.5	5 12 14.41	21 32 59.7	0.3	1.3	0.10
25	14 56.2	5 16 57.81	21 38 44.7	0.3	1.3	0.09	10	11 50.5	5 12 7.14	21 32 51.7	0.3	1.3	0.10
26	14 52.2	5 16 53.29	+21 38 38.3	0.3	1.3	0.09	11	11 46.4	5 11 59.88	+21 32 43.8	0.3	1.3	0.10
27	14 48.2	5 16 48.67	21 38 31.7	0.3	1.3	0.09	12	11 42.4	5 11 52.62	21 32 36.0	0.3	1.3	0.10
28	14 44.1	5 16 43.92	21 38 25.1	0.3	1.3	0.09	13	11 38.3	5 11 45.36	21 32 28.2	0.3	1.3	0.10
29	14 40.1	5 16 39.05	21 38 18.3	0.3	1.3	0.09	14	11 34.3	5 11 38.12	21 32 20.4	0.3	1.3	0.10
30	14 36.1	5 16 34.08	21 38 11.5	0.3	1.3	0.09	15	11 30.2	5 11 30.89	21 32 12.7	0.3	1.3	0.10
31	14 32.1	5 16 29.01	+21 38 4.6	0.3	1.3	0.09	16	11 26.2	5 11 23.67	+21 32 5.0	0.3	1.3	0.10
Nov. 1	14 28.1	5 16 23.85	21 37 57.6	0.3	1.3	0.09	17	11 22.1	5 11 16.48	21 31 57.4	0.3	1.3	0.10
2	14 24.0	5 16 18.58	21 37 50.6	0.3	1.3	0.09	18	11 18.1	5 11 9.32	21 31 49.9	0.3	1.3	0.10
3	14 20.0	5 16 13.21	21 37 43.5	0.3	1.3	0.09	19	11 14.0	5 11 2.18	21 31 42.4	0.3	1.3	0.10
4	14 16.0	5 16 7.75	21 37 36.3	0.3	1.3	0.09	20	11 9.9	5 10 55.07	21 31 35.0	0.3	1.3	0.10
5	14 12.0	5 16 2.19	+21 37 29.1	0.3	1.3	0.09	21	11 5.9	5 10 47.99	+21 31 27.7	0.3	1.3	0.10
6	14 8.0	5 15 56.53	21 37 21.7	0.3	1.3	0.09	22	11 1.8	5 10 40.93	21 31 20.5	0.3	1.3	0.10
7	14 3.9	5 15 50.77	21 37 14.3	0.3	1.3	0.10	23	10 57.8	5 10 33.91	21 31 13.3	0.3	1.3	0.10
8	13 59.9	5 15 44.93	21 37 6.9	0.3	1.3	0.10	24	10 53.8	5 10 26.92	21 31 6.2	0.3	1.3	0.10
9	13 55.9	5 15 39.02	21 36 59.4	0.3	1.3	0.10	25	10 49.7	5 10 19.99	21 30 59.1	0.3	1.3	0.10
10	13 51.9	5 15 33.02	+21 36 51.8	0.3	1.3	0.10	26	10 45.7	5 10 13.11	+21 30 52.2	0.3	1.3	0.10
11	13 47.8	5 15 26.95	21 36 44.1	0.3	1.3	0.10	27	10 41.6	5 10 6.28	21 30 45.4	0.3	1.3	0.10
12	13 43.8	5 15 20.79	21 36 36.4	0.3	1.3	0.10	28	10 37.6	5 9 59.50	21 30 38.6	0.3	1.3	0.10
13	13 39.8	5 15 14.55	21 36 28.7	0.3	1.3	0.10	29	10 33.5	5 9 52.78	21 30 31.9	0.3	1.3	0.10
14	13 35.7	5 15 8.24	21 36 20.9	0.3	1.3	0.10	30	10 29.5	5 9 46.10	21 30 25.3	0.3	1.3	0.10
15	13 31.7	5 15 1.85	+21 36 13.1	0.3	1.3	0.10	31	10 25.5	5 9 39.47	+21 30 18.8	0.3	1.3	0.10
16	13 27.6	5 14 55.40	+21 36 5.3	0.3	1.3	0.10	32	10 21.4	5 9 32.90	+21 30 12.5	0.3	1.3	0.10

PART III



PHENOMENA

ECLIPSES IN 1896.

In the year 1896 there will be four eclipses, two of the sun and two of the moon.

I.—*An Annular Eclipse of the Sun*, 1896, February 13, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of \odot in right ascension, February 13				^d 3	^h 32	^m 25.9		
Sun and moon's R. A.	^h 21	^m 47	^s 8.01	Hourly motions		^s 9.79 and 113.38		
Sun's declination	[°] 13	['] 22	["] 12.3 S.	Hourly motion		["] 0 50.5 N.		
Moon's declination	[°] 14	['] 17	["] 33.2 S.	Hourly motion		["] 12 35.0 N.		
Sun's equa. hor. parallax	8.9			Sun's true semidiameter		["] 16 11.7		
Moon's equa. hor. parallax	["] 54	["] 29.3	Moon's true semidiameter		["] 14 50.1			

CIRCUMSTANCES OF THE ECLIPSE.

		^d ^h ^m	Longitude from Greenwich.	Latitude.
Eclipse begins	February 13	1 53.9	137° 45.9 W.	58° 32.5 S.
Central eclipse begins		3 38.8	117 0.7 E.	76 21.0 S.
Central eclipse ends		5 8.5	28 24.5 E.	41 4.5 S.
Eclipse ends		6 53.2	7 10.8 W.	10 32.9 S.

II.—*A Partial Eclipse of the Moon*, 1896, February 28, invisible at Washington, but visible generally in Europe, Asia, and Africa.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of \odot in right ascension, February 28					^d 8	^h 15	^m 40.4	
Sun's right ascension	22	^h 45	^m 20.08		Hourly motion		^s 9.38	
Moon's right ascension	10	^h 45	^m 20.08		Hourly motion		136.15	
Sun's declination	7	[°] 54	['] 21.3 S.		Hourly motion		0 56.7 N.	
Moon's declination	7	[°] 16	['] 18.4 N.		Hourly motion		17 30.7 S.	
Sun's equa. hor. parallax			8.9		Sun's true semidiameter	16	8.5	
Moon's equa. hor. parallax	61		15.5		Moon's true semidiameter	16	40.7	

TIMES OF THE PHASES.

Moon enters penumbra	February 28	^d 5	^h 14.4	} Greenwich Mean Time.
Moon enters shadow		28	6 16.3	
Middle of the eclipse		28	7 45.8	
Moon leaves shadow		28	9 15.1	
Moon leaves penumbra		28	10 16.7	

CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from north point.	The moon being in the zenith in longitude from Greenwich	and in latitude.
First	85° to E.	88° 3' E.	7° 51' N.
Last	30 to W.	44 56 E.	6 59 N.

Magnitude of the eclipse = 0.871, (moon's diameter = 1.0).

III.—*A Total Eclipse of the Sun*, 1896, August 8, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, August 8 ^d 16 ^h 37 ^m 19 ^s .7			
Sun and moon's R. A.	9 ^h 17 ^m 57 ^s .53	Hourly motions	9.50 and 137.95
Sun's declination	15° 44' 23.4" N.	Hourly motion	0° 43.6" S.
Moon's declination	16° 29' 18.9" N.	Hourly motion	13 56.0 S.
Sun's equa. hor. parallax	8.7	Sun's true semidiameter	15 48.0
Moon's equa. hor. parallax	59 28.0	Moon's true semidiameter	16 11.4

CIRCUMSTANCES OF THE ECLIPSE.

		Longitude from Greenwich.	Latitude.
Eclipse begins	August 8 ^d 14 ^h 43 ^m 3	32° 22.3' E.	47° 46.8' N.
Central eclipse begins	8 15 53.2	0 20.5 W.	62 51.5 N.
Central eclipse at noon	8 16 37.3	111 59.1 E.	65 17.9 N.
Central eclipse ends	8 18 25.3	179 5.9 W.	20 8.5 N.
Eclipse ends	8 19 34.9	158 34.5 E.	3 29.2 N.

IV.—*A Partial Eclipse of the Moon*, 1896, August 22, visible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, August 22 ^d 19 ^h 32 ^m 3.4 ^s			
Sun's right ascension	10 ^h 10 ^m 44.30 ^s	Hourly motion	9.20
Moon's right ascension	22 10 44.30	Hourly motion	112.81
Sun's declination	11° 15' 37.3" N.	Hourly motion	0° 51.2" S.
Moon's declination	10 38 44.8 S.	Hourly motion	13 29.8 N.
Sun's equa. hor. parallax	8.7	Sun's true semidiameter	15 49.6
Moon's equa. hor. parallax	55 4.2	Moon's true semidiameter	14 59.6

TIMES OF THE PHASES.

Moon enters penumbra	August 22 ^d 16 ^h 6 ^m 7	} Greenwich Mean Time.
Moon enters shadow	22 17 24.5	
Middle of the eclipse	22 18 57.5	
Moon leaves shadow	22 20 30.4	
Moon leaves penumbra	22 21 47.9	

CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from north point.	The moon being in the zenith in longitude from Greenwich	and in latitude.
First	101° to E.	81° 26' W.	11° 7' S.
Last	153 to W.	126 35 W.	10 26 S.

Magnitude of the eclipse = 0.735 (moon's diameter = 1.0).

The regions within which the eclipses of the sun are visible, are laid down on the accompanying charts, from which, by means of the dotted lines, may also be found the Greenwich times of beginning and ending for any place within fifteen or twenty minutes.

**BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE
OF THE SUN, 1896, FEBRUARY 13.**

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow On Fundamental Plane.	
	<i>x</i>	<i>y</i>	Log sin <i>d</i>	Log cos <i>d</i>	μ	<i>l</i>	<i>l'</i>
h m							
1 50	-0.78773	-1.38730	-9.36473	+9.98803	23 53.4	+0.57086	+0.02483
2 0	-0.71082	-1.35133	-9.36465	+9.98803	26 23.4	+0.57088	+0.02485
10	0.63391	1.31535	9.36458	9.98804	28 53.5	0.57090	0.02487
20	0.55700	1.27937	9.36451	9.98804	31 23.5	0.57092	0.02489
30	0.48009	1.24338	9.36444	9.98804	33 53.5	0.57093	0.02490
40	0.40318	1.20739	9.36436	9.98805	36 23.5	0.57095	0.02492
50	0.32628	1.17139	9.36429	9.98805	38 53.5	0.57097	0.02494
3 0	-0.24938	-1.13538	-9.36422	+9.98806	41 23.5	+0.57098	+0.02495
10	0.17249	1.09937	9.36415	9.98806	43 53.5	0.57100	0.02497
20	0.09560	1.06335	9.36407	9.98806	46 23.6	0.57101	0.02499
30	-0.01871	1.02732	9.36400	9.98807	48 53.6	0.57103	0.02500
40	+0.05818	0.99128	9.36393	9.98807	51 23.6	0.57104	0.02501
50	0.13506	0.95523	9.36386	9.98807	53 53.6	0.57105	0.02502
4 0	+0.21194	-0.91917	-9.36378	+9.98808	56 23.6	+0.57106	+0.02503
10	0.28882	0.88311	9.36371	9.98808	58 53.6	0.57107	0.02504
20	0.36570	0.84705	9.36364	9.98808	61 23.6	0.57108	0.02505
30	0.44258	0.81098	9.36357	9.98809	63 53.7	0.57109	0.02506
40	0.51946	0.77491	9.36349	9.98809	66 23.7	0.57110	0.02507
50	0.59633	0.73883	9.36342	9.98810	68 53.7	0.57111	0.02508
5 0	+0.67320	-0.70275	-9.36335	+9.98810	71 23.7	+0.57112	+0.02509
10	0.75006	0.66666	9.36328	9.98810	73 53.7	0.57113	0.02510
20	0.82692	0.63057	9.36321	9.98811	76 23.7	0.57114	0.02511
30	0.90377	0.59447	9.36313	9.98811	78 53.7	0.57115	0.02511
40	0.98062	0.55836	9.36306	9.98812	81 23.8	0.57115	0.02512
50	1.05747	0.52225	9.36299	9.98812	83 53.8	0.57116	0.02512
6 0	+1.13431	-0.48613	-9.36292	+9.98813	86 23.8	+0.57116	+0.02513
10	1.21115	0.45001	9.36285	9.98813	88 53.8	0.57116	0.02513
20	1.28798	0.41389	9.36277	9.98813	91 23.8	0.57117	0.02514
30	1.36481	0.37776	9.36270	9.98814	93 53.8	0.57117	0.02514
40	1.44163	0.34163	9.36263	9.98814	96 23.8	0.57117	0.02514
50	1.51845	0.30548	9.36256	9.98815	98 53.9	0.57118	0.02515
7 0	+1.59527	-0.26933	-9.36249	+9.98815	101 23.9	+0.57118	+0.02515

Greenwich Mean Time.	Log Δx for 1 Minute.	Log Δy for 1 Minute.	Log $\Delta \mu$ for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
h m					
1 0	+ 7.8861	+ 7.5555	+1.1761	+7.67540	+7.67323
2 0	7.8860	7.5560	1.1761	7.67540	7.67323
3 0	7.8859	7.5565	1.1761	7.67539	7.67322
4 0	7.8858	7.5569	1.1761	7.67539	7.67322
5 0	7.8857	7.5573	1.1761	7.67539	7.67322
6 0	7.8856	7.5577	1.1761	7.67538	7.67321
7 0	+ 7.8854	+ 7.5581	+1.1761	+7.67538	+7.67321

NOTE.—Geographical positions, centre line, &c., are not given for this eclipse.

**BESSELIAN ELEMENTS OF THE TOTAL ECLIPSE
OF THE SUN, 1896, AUGUST 8.**

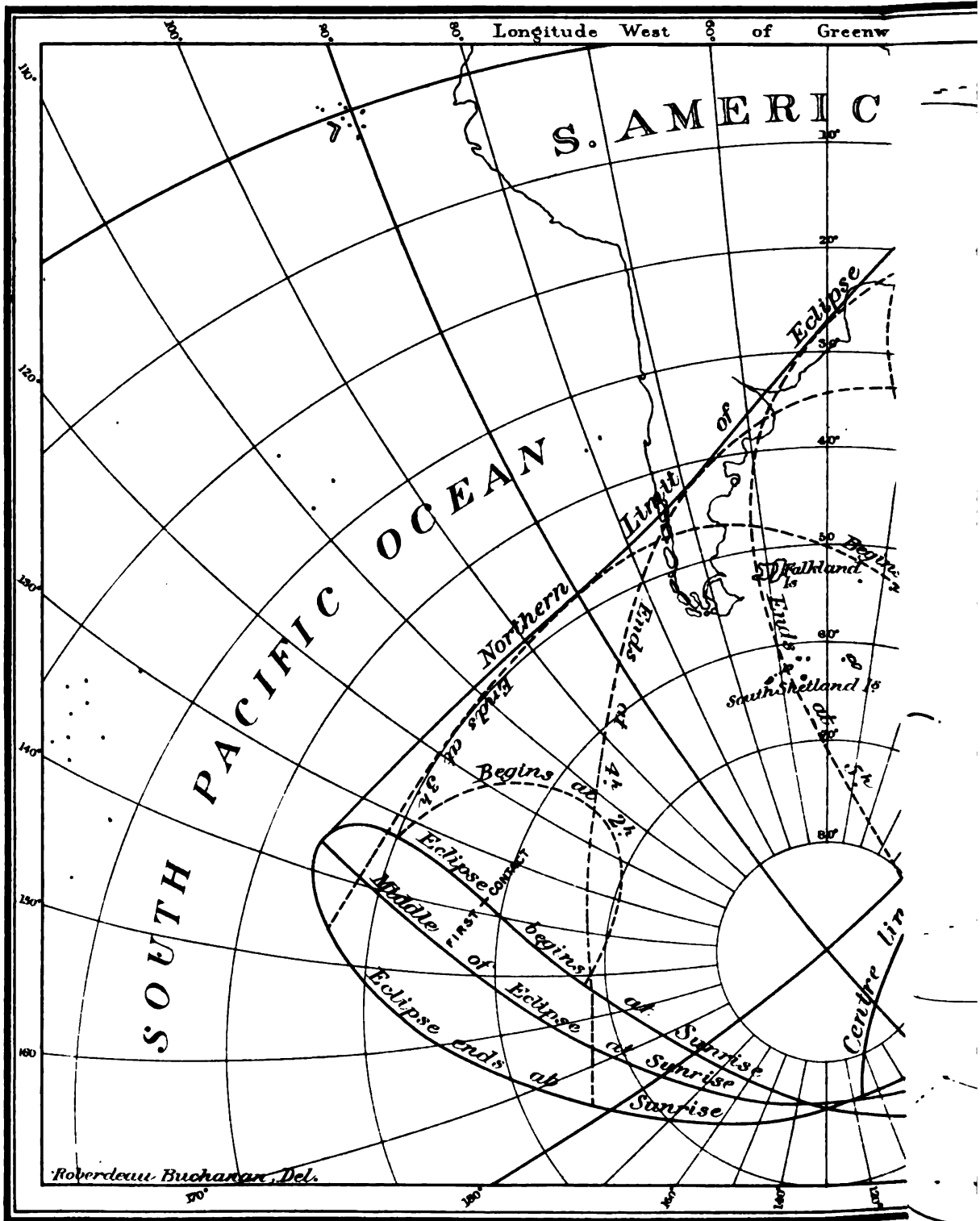
Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow On Fundamental Plane.	
	<i>x</i>	<i>y</i>	Log sin <i>d</i>	Log cos <i>d</i>	μ	<i>l</i>	<i>l'</i>
h m					° '		
14 40	-1.01510	+1.19269	+9.43396	+9.98335	218 40.7	+0.53912	-0.00675
50	0.92858	1.15563	9.43390	9.98336	221 10.7	0.53912	0.00676
15 0	-0.84206	+1.11857	+9.43385	+9.98336	223 40.8	+0.53911	-0.00677
10	0.75554	1.08149	9.43380	9.98336	226 10.8	0.53910	0.00678
20	0.66902	1.04440	9.43375	9.98337	228 40.8	0.53909	0.00679
30	0.58249	1.00730	9.43370	9.98337	231 10.9	0.53908	0.00680
40	0.49597	0.97020	9.43365	9.98338	233 40.9	0.53907	0.00681
50	0.40945	0.93309	9.43359	9.98338	236 10.9	0.53906	0.00682
16 0	-0.32293	+0.89597	+9.43354	+9.98339	238 40.9	+0.53905	-0.00683
10	0.23641	0.85884	9.43349	9.98339	241 11.0	0.53904	0.00684
20	0.14989	0.82171	9.43344	9.98340	243 41.0	0.53902	0.00685
30	-0.06338	0.78457	9.43339	9.98340	246 11.0	0.53901	0.00687
40	+0.02313	0.74742	9.43334	9.98341	248 41.0	0.53899	0.00688
50	0.10964	0.71026	9.43329	9.98341	251 11.1	0.53898	0.00689
17 0	+0.19615	+0.67309	+9.43324	+9.98342	253 41.1	+0.53896	-0.00691
10	0.28266	0.63592	9.43318	9.98342	256 11.1	0.53895	0.00692
20	0.36917	0.59874	9.43313	9.98342	258 41.2	0.53893	0.00694
30	0.45568	0.56155	9.43308	9.98343	261 11.2	0.53891	0.00696
40	0.54218	0.52435	9.43303	9.98343	263 41.2	0.53889	0.00698
50	0.62868	0.48714	9.43298	9.98344	266 11.2	0.53887	0.00700
18 0	+0.71518	+0.44993	+9.43293	+9.98344	268 41.3	+0.53885	-0.00702
10	0.80168	0.41271	9.43287	9.98344	271 11.3	0.53883	0.00705
20	0.88817	0.37549	9.43282	9.98345	273 41.3	0.53881	0.00707
30	0.97466	0.33826	9.43277	9.98345	276 11.4	0.53879	0.00709
40	1.06115	0.30102	9.43272	9.98345	278 41.4	0.53877	0.00712
50	1.14763	0.26377	9.43267	9.98346	281 11.4	0.53875	0.00713
19 0	+1.23411	+0.22652	+9.43261	+9.98346	283 41.4	+0.53872	-0.00715
10	1.32058	0.18926	9.43256	9.98346	286 11.5	0.53870	0.00718
20	1.40705	0.15199	9.43251	9.98347	288 41.5	0.53867	0.00720
30	1.49351	0.11472	9.43246	9.98347	291 11.5	0.53865	0.00723
40	+1.57997	+0.07744	+9.43240	+9.98347	293 41.5	+0.53862	-0.00725

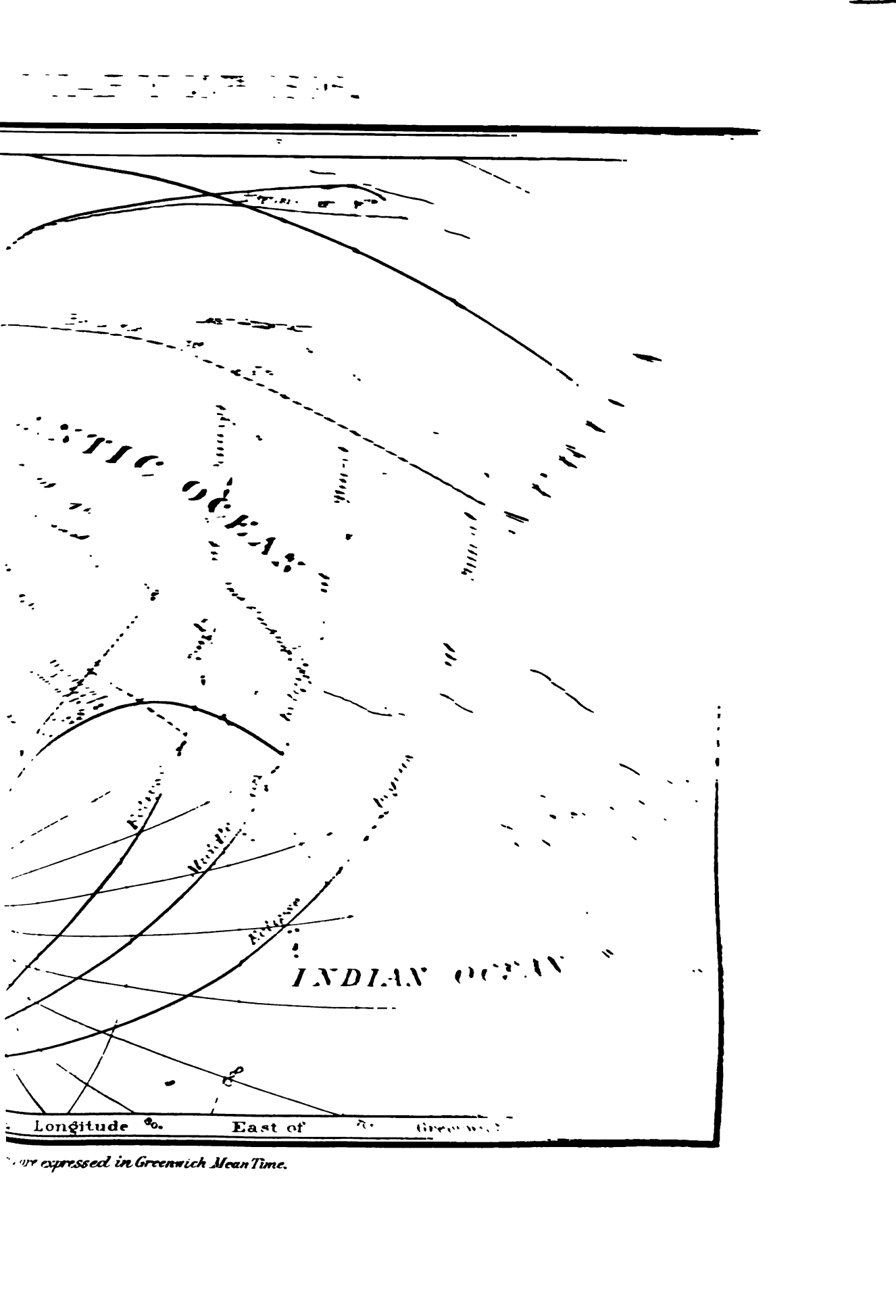
Greenwich Mean Time.	Log Δx for 1 Minute.	Log Δy for 1 Minute.	Log $\Delta \mu$ for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
h m					
14 0	+ 7.9371	— 7.5683	+ 1.1762	+ 7.66406	+ 7.66190
15 0	7.9371	7.5691	1.1762	7.66407	7.66190
16 0	7.9371	7.5697	1.1762	7.66407	7.66190
17 0	7.9371	7.5702	1.1762	7.66407	7.66190
18 0	7.9370	7.5707	1.1762	7.66408	7.66191
19 0	7.9369	7.5712	1.1762	7.66408	7.66191
20 0	+ 7.9367	— 7.5717	+ 1.1762	+ 7.66408	+ 7.66191

PATH OF THE SHADOW DURING THE TOTAL ECLIPSE
OF THE SUN, 1896, AUGUST 8.

Greenwich Mean Time.	Northern Limit of Shadow Path.		Central Line.		Southern Limit of Shadow Path.		Duration of Totality on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits. 15 ^h 55 ^m	+63 10.6 67 20.0	0 57.4 W. 12 0.9 E.	+62 51.5 67 46.1	0 20.5 W. 17 23.6 E.	+62 18.2 68 12.2	0 49.2 E. 22 46.3	1 34.7
16 0	+71 24.3	34 53.6	+71 3.8	38 31.8	+70 43.3	42 10.0	1 47.9
5	72 43.4	52 16.0	72 6.2	54 55.9	71 29.0	57 35.8	1 57.7
10	72 51.5	66 59.0	72 5.8	68 45.2	71 20.1	70 31.4	2 5.5
15	72 16.7	79 18.5	71 27.1	80 18.6	70 37.5	81 18.7	2 12.2
20	71 15.0	89 27.1	70 24.4	89 51.1	69 33.8	90 15.1	2 17.9
25	69 56.0	97 44.6	69 5.8	97 43.6	68 15.6	97 42.6	2 22.7
30	+68 26.2	104 34.3	+67 37.6	104 15.5	+66 49.0	103 56.7	2 26.9
35	66 50.4	110 18.1	66 3.6	109 45.1	65 16.8	109 12.1	2 30.6
40	65 9.6	115 5.9	64 24.9	114 22.7	63 40.2	113 39.8	2 33.9
45	63 26.7	119 13.1	62 44.1	118 23.3	62 1.5	117 33.5	2 36.5
50	61 41.9	122 45.7	61 1.4	121 51.8	60 20.9	120 57.9	2 38.5
55	59 56.4	125 54.1	59 17.9	124 57.2	58 39.4	124 0.3	2 40.0
17 0	+58 10.2	128 41.6	+57 33.6	127 42.7	+56 57.0	126 43.8	2 41.1
5	56 23.5	131 13.8	55 48.8	130 13.5	55 14.1	129 13.2	2 41.7
10	54 36.4	133 33.1	54 3.5	132 31.9	53 30.6	131 30.7	2 41.8
15	52 48.9	135 43.3	52 17.7	134 41.5	51 46.5	133 39.7	2 41.4
20	51 0.8	137 46.0	50 31.3	136 43.8	50 1.8	135 41.6	2 40.6
25	49 12.1	139 43.4	48 44.2	138 40.9	48 16.3	137 38.4	2 39.3
30	+47 22.5	141 37.4	+46 56.1	140 34.7	+46 29.7	139 32.0	2 37.6
35	45 31.9	143 30.5	45 7.1	142 27.5	44 42.3	141 24.5	2 35.4
40	43 39.9	145 24.1	43 16.6	144 20.8	42 53.3	143 17.5	2 32.7
45	41 46.0	147 19.8	41 24.3	146 16.1	41 2.6	145 12.4	2 29.5
50	39 49.6	149 19.6	39 29.5	148 15.5	39 9.4	147 11.4	2 25.8
55	37 49.9	151 27.7	37 31.5	150 22.4	37 13.1	149 17.1	2 21.6
18 0	+35 46.2	153 46.2	+35 29.7	152 39.1	+35 13.2	151 32.0	2 16.7
5	33 36.8	156 21.3	33 22.5	155 11.8	33 8.2	154 2.3	2 11.0
10	31 18.9	159 22.0	31 7.3	158 8.4	30 55.7	156 54.8	2 4.5
15	28 47.0	163 6.9	28 39.4	161 46.0	28 31.8	160 25.1	1 56.9
20	25 48.4	168 19.3 E.	25 47.7	166 40.7	25 47.0	165 2.1	1 46.5
25			21 18.3	177 10.5 E.	22 22.3	171 59.8 E.	1 28.1
Limits.	+20 40.0	178 44.8 W.	+20 8.5	179 5.9 W.	+19 34.6	179 29.3 W.	

ANNULAR ECLIPSE





Longitude °. East of °. Greenwich

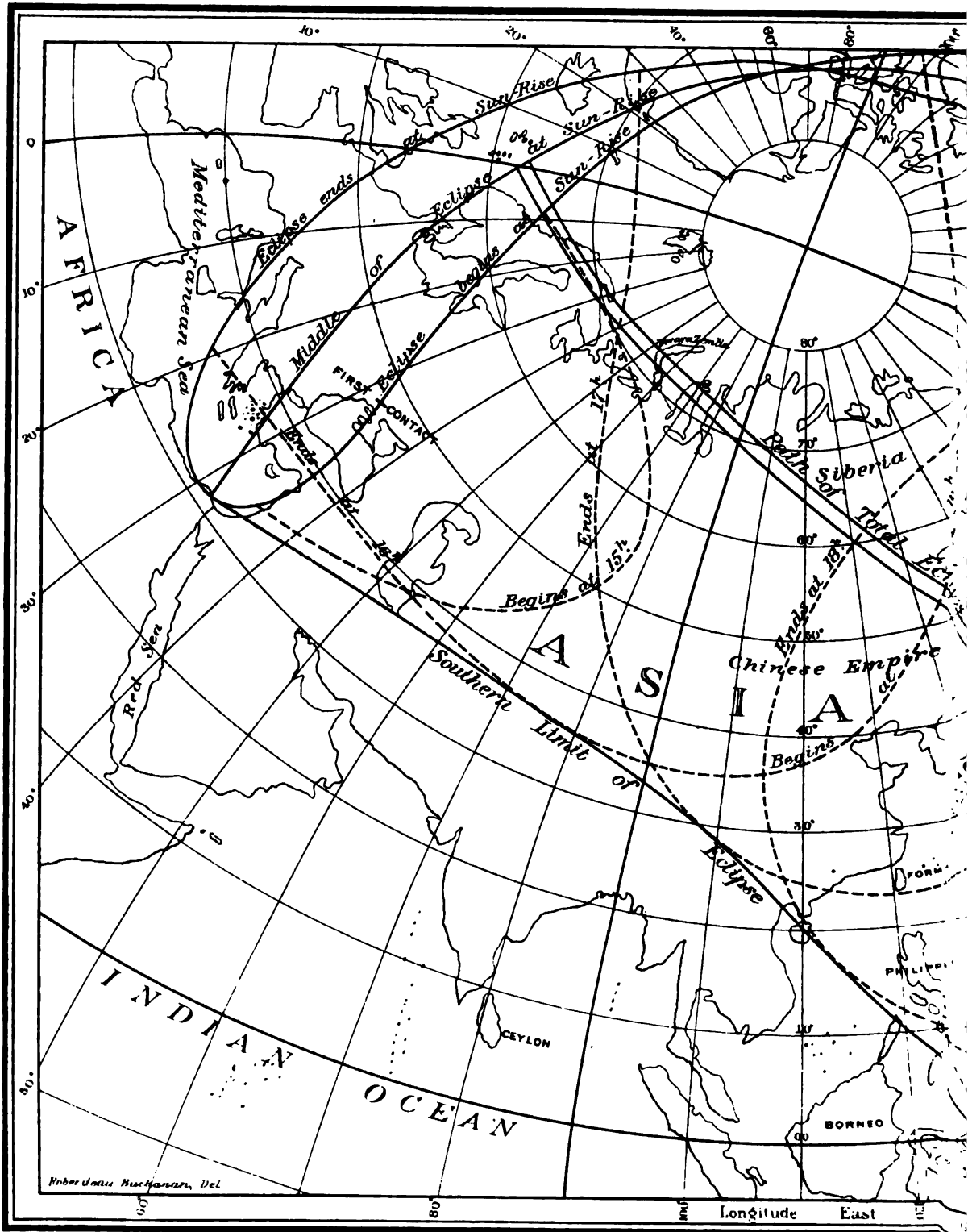
are expressed in Greenwich Mean Time.

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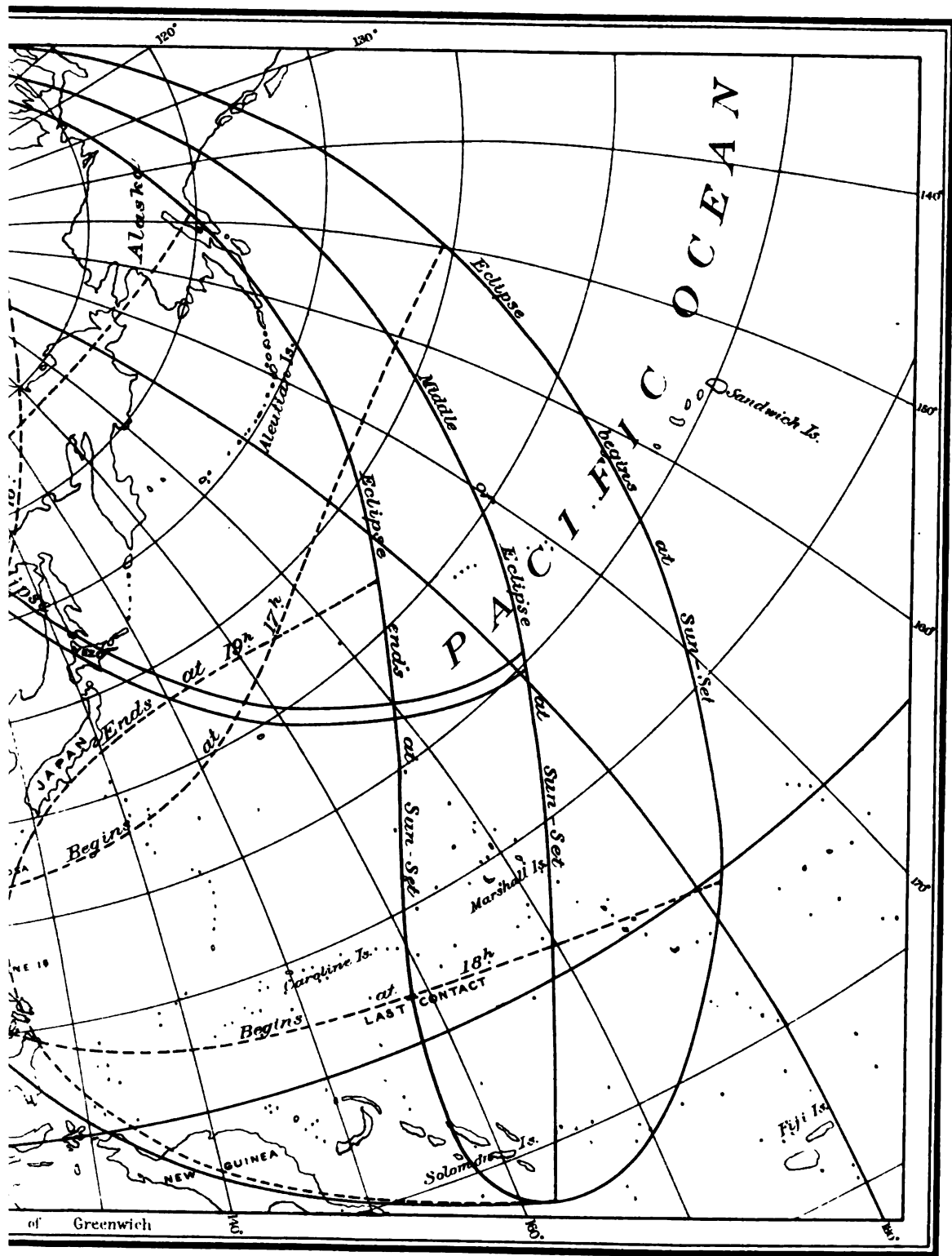
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TOTAL ECLIPSE OF



Note. The hours of beginning and ending

1 AUGUST 8TH 1896.



expressed in Greenwich Mean Time

WASHINGTON MEAN TIME.

PHASES OF THE MOON.

New Moon.				First Quarter.				Full Moon.				Last Quarter.			
d h m				d h m				d h m				d h m			
January	14	5	11.2	January	22	9	34.1	January	29	15	47.1	January	6	22	16.7
February	12	23	4.4	February	21	4	6.4	February	28	2	43.1	February	5	7	29.8
March	13	17	39.7	March	21	18	48.5	March	28	12	13.3	March	5	18	20.7
April	12	11	14.6	April	20	5	38.5	April	26	20	39.0	April	4	7	15.9
May	12	2	38.4	May	19	13	12.8	May	26	4	48.3	May	3	22	17.0
June	10	15	34.6	June	17	18	32.4	June	24	13	46.7	June	2	14	54.0
July	10	2	26.8	July	16	22	56.1	July	24	0	36.9	July	2	8	15.0
August	8	11	53.6	August	15	3	54.3	August	22	13	56.2	August	1	1	26.1
September	6	20	35.1	September	13	11	1.3	September	21	5	41.1	August	30	17	47.0
October	6	5	10.0	October	12	21	39.2	October	20	23	9.2	September	29	8	50.2
November	4	14	18.8	November	11	12	32.4	November	19	17	16.7	October	28	22	12.4
December	4	0	42.8	December	11	7	21.1	December	19	10	57.1	November	27	9	35.5
												December	26	19	0.4

PERIGEE, APOGEE, AND GREATEST LIBRATION.

Perigee.		Apogee.		Greatest Libration.							
	d h		d h		d h m						d h m
January	3 11.0	January	19 11.3	January	11 11 0 E.					January	25 14 49 W.
January	31 8.8	February	16 2.9	February	7 2 50 E.					February	22 20 50 W.
February	28 18.3	March	14 8.3	March	5 24 11 E.					March	22 3 28 W.
March	28 6.3	April	10 10.6	April	3 6 14 E.					April	19 4 20 W.
April	25 16.1	May	7 22.6	May	1 12 23 E.					May	16 12 12 W.
May	23 18.2	June	4 15.5	May	29 13 46 E.					June	11 20 4 W.
June	19 22.2	July	2 10.1	June	26 5 0 E.					July	8 15 55 W.
July	15 0.9	July	30 4.7	July	23 2 32 E.					August	5 6 7 W.
August	11 1.3	August	26 21.4	August	18 9 38 E.					September	2 6 44 W.
September	8 2.8	September	23 9.7	September	14 15 22 E.					September	30 12 27 W.
October	6 12.0	October	20 12.9	October	12 15 22 E.					October	28 18 17 W.
November	3 23.7	November	16 16.4	November	9 21 30 E.					November	25 15 43 W.
December	2 9.3	December	14 6.9	December	8 3 23 E.					December	22 8 26 W.
December	30 7.3										

FORMULÆ FOR THE LIBRATION OF THE MOON.

Put I , the inclination of the moon's equator to the ecliptic ($= 1^\circ 28'.8$),

Ω , the mean longitude of the moon's ascending node, (see page 278), or the mean longitude of the descending node of the moon's equator,

C , the angle at the centre of the moon's disk made by a lunar meridian with the circle of declination, counted from north to east on the apparent disk,

$\lambda, \beta, \alpha', \delta'$ the apparent longitude, latitude, right ascension, and declination of the moon, corrected for parallax,

λ' , the selenocentric longitude of the earth, counted on the moon's equator from its descending node, Ω ,

$i, \Delta, \Omega', \epsilon$, the quantities defined on page 276, where their values for the year are given.

The moon's libration in longitude and latitude may then be found, for any time, by means of the following formulæ, in connection with the tables given on pages 276 and 277:—

$$\left. \begin{aligned} \Delta \lambda &= -0'.57 \sin 2 (\Omega - \lambda) \\ a &= \sin I \cos (\Omega - \lambda) \\ \tan B &= \tan I \sin (\Omega - \lambda) \\ \lambda' &= \lambda + \Delta \lambda + a \delta \end{aligned} \right\} \text{ See table, page 277.}$$

The libration in latitude $= b = B - \beta$

The libration in longitude $= l = \lambda' - \epsilon$

$$\sin C = \sin i \frac{\cos (\lambda' + \Delta - \Omega)}{\cos \delta'} = - \sin i \frac{\cos (\alpha' - \Omega')}{\cos \delta}$$

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>
		$\Delta\alpha$	$\Delta\delta$								
		α	δ		d h m	h m				$^{\circ}$	$^{\circ}$
κ Geminorum	3.7	+2.09	+2.2	+24 38.8	1 0 1.9	+11 7.1	+0.4119	0.5856	-0.1381	+70	-5
μ^1 Cancri	6.3	2.03	1.1	22 55.9	8 42.6	-4 32.7	+0.8455	0.5805	0.1616	+90	+16
B. A. C. 2703	7.5	2.03	+1.1	22 45.4	8 49.5	-4 26.1	+1.0030	0.5805	0.1620	+90	+26
η Cancri	5.4	1.96	-0.3	20 47.7	19 24.1	+5 44.0	+1.1260	0.5737	0.1881	+90	+31
38 Cancri	7.0	1.92	0.6	20 8.7	22 16.6	+8 30.0	+1.2280	0.5722	0.1945	+90	+41
39 Cancri	7.0	+1.92	-0.7	+20 22.5	22 26.1	+8 39.1	+0.9670	0.5716	-0.1949	+90	+20
40 Cancri	7.3	1.92	0.7	20 20.3	22 28.3	+8 41.2	+0.9970	0.5716	0.1951	+90	+22
B. A. C. 2919	7.3	1.92	0.7	20 2.2	22 32.9	+8 45.6	+1.2890	0.5715	0.1952	+90	+48
ϵ Cancri	7.1	1.92	0.7	20 5.3	22 41.6	+8 53.9	+1.2050	0.5715	0.1955	+90	+38
B. A. C. 2931	7.5	1.92	0.8	20 14.7	23 8.9	+9 20.2	+0.9583	0.5715	0.1965	+90	+19
γ Cancri	4.9	+1.94	-1.1	+21 50.5	23 43.6	+9 53.6	-0.7635	0.5709	-0.1978	+1	-65
78 Cancri	7.8	1.82	1.9	17 53.4	2 10 32.1	-3 42.0	+0.9499	0.5632	0.2202	+90	+16
80 Cancri	6.8	1.82	2.2	18 28.2	11 45.7	-2 31.1	+0.0972	0.5626	0.2224	+49	-30
83 Cancri	5.7	1.79	2.5	18 8.8	14 45.9	+0 22.5	-0.2563	0.5607	0.2279	+31	-49
8 Leonis	5.7	1.70	3.4	16 54.1	22 34.0	+7 53.8	-0.8335	0.5549	0.2408	-1	-73
11 Leonis	6.8	+1.67	-3.0	+14 48.9	23 1.5	+8 20.3	+1.1520	0.5549	-0.2415	+90	+27
ψ Leonis	6.0	1.65	3.2	14 29.7	3 1 31.0	+10 44.4	+0.8650	0.5527	0.2453	+90	+7
23 Leonis	6.3	1.61	3.4	13 33.0	4 44.4	-10 8.9	+1.0160	0.5509	0.2498	+90	+16
ν Leonis	5.3	1.56	3.6	12 56.3	7 56.0	-7 4.0	+0.8249	0.5493	0.2540	+90	+4
α Leonis	1.3	1.54	4.0	12 28.5	12 29.2	-2 40.2	+0.1219	0.5463	0.2595	+51	-34
44 Leonis	6.0	+1.43	-4.1	+9 18.7	20 8.5	+4 43.3	+1.2800	0.5420	-0.2674	+90	+34
45 Leonis	6.0	1.43	4.5	10 17.4	21 13.6	+5 46.2	+0.0067	0.5416	0.2684	+44	-41
ρ Leonis	4.0	1.40	4.6	9 47.9	23 35.7	+8 3.6	-0.1807	0.5398	0.2705	+35	-51
49 Leonis	6.0	1.39	4.5	9 11.2	4 0 37.5	+9 3.3	+0.1974	0.5394	0.2713	+55	-32
37 Sextantis	6.3	1.33	4.4	6 55.2	5 44.6	+9 59.9	+1.0750	0.5369	0.2751	+90	+16
38 Sextantis	7.8	+1.32	-4.4	+6 53.6	6 18.7	-9 26.9	+0.9443	0.5369	-0.2754	+90	+7
56 Leonis	6.6	1.27	4.8	6 44.3	10 21.8	-5 31.8	-0.0184	0.5355	0.2777	+43	-44
ϵ Leonis	5.3	1.25	5.0	6 39.5	12 34.3	-3 23.7	-0.5530	0.5342	0.2790	+16	-76
79 Leonis	6.0	1.11	4.6	1 58.6	23 23.7	+7 14.2	+1.0670	0.5308	0.2827	+90	+14
82 Leonis	6.9	1.12	5.2	3 52.3	5 0 19.5	+7 58.5	-1.0550	0.5307	0.2827	-13	-86
83 Leonis	6.5	+1.11	-5.1	+3 34.7	0 24.5	+8 3.3	-0.7852	0.5304	-0.2827	+4	-77
τ Leonis	5.1	1.10	5.2	+3 25.6	1 24.1	+9 0.9	-0.9145	0.5302	0.2830	-4	87
B. A. C. 4134	6.3	0.77	4.8	-3 22.7	6 1 21.3	+8 11.8	-0.8179	0.5282	0.2798	+1	90
f Virginis	6.0	0.64	4.7	5 15.6	10 13.7	-7 12.9	-1.3760	0.5290	0.2751	-44	-90
χ Virginis	5.2	0.60	4.1	7 25.5	11 23.5	-6 5.4	+0.5002	0.5293	0.2744	+72	-18
28 Virginis	7.0	+0.60	-4.4	-6 55.8	12 40.6	-4 50.8	-0.3551	0.5297	-0.2735	+25	-64
ψ Virginis	5.2	0.51	4.1	8 58.6	18 32.2	+0 49.4	+0.1338	0.5309	0.2689	+49	-37
κ Virginis	5.9	0.43	4.2	10 11.2	7 0 54.1	+6 58.9	-0.3309	0.5325	0.2632	+25	-63
50 Virginis	6.3	0.43	4.3	9 46.6	1 46.6	+7 49.7	-0.9790	0.5328	0.2625	-11	-90
62 Virginis	7.0	0.37	4.3	10 45.6	6 43.0	-11 23.7	-1.2620	0.5344	0.2572	-33	-90
i Virginis	5.7	+0.32	-4.0	-12 10.1	9 40.5	-8 32.0	-0.5832	0.5357	-0.2539	+10	-81
83 Virginis	6.0	0.21	3.2	15 39.5	17 49.8	-0 39.1	+0.9545	0.5389	0.2436	+74	+8
85 Virginis	6.5	+0.21	3.4	15 14.8	18 20.0	-0 9.9	+0.4108	0.5391	0.2428	+61	23
B. A. C. 4923	7.3	-0.17	3.9	20 56.8	9 2 7.8	+6 31.7	-0.6266	0.5556	0.1873	0	-88
42 Libræ	5.7	0.36	4.4	23 28.9	20 17.4	+0 1.6	-1.0410	0.5652	0.1453	-30	-90
B. A. C. 5197	6.0	-0.39	-4.3	-24 23.5	22 35.0	+2 14.1	-0.4211	0.5665	-0.1395	+5	-71
δ Scorpïi	5.3	0.42	4.2	25 26.2	10 0 42.1	+4 16.4	+0.3745	0.5675	0.1342	+46	-23
A ¹ Scorpïi	5.2	0.42	4.3	25 1.1	1 48.0	+5 19.8	0.2064	0.5679	0.1313	+15	-56
B. A. C. 5253	5.8	0.42	4.6	24 13.5	1 55.9	+5 27.4	-1.0500	0.5679	0.1310	-32	90
B. A. C. 5255	6.0	0.42	4.3	25 6.2	2 2.7	+5 34.0	-0.1510	0.5679	0.1308	+18	-53
3 Scorpïi	6.7	-0.42	-4.4	-24 56.2	2 14.1	+5 45.0	-0.3486	0.5679	-0.1303	+8	-66
4 Scorpïi	6.3	0.44	4.1	25 57.7	2 33.9	+6 4.0	+0.0750	0.5683	0.1294	+63	-5
B. A. C. 5314	5.7	0.46	4.5	25 34.6	5 48.2	+9 11.0	0.1303	0.5697	0.1209	+18	-52
B. A. C. 5347	6.0	0.48	4.5	26 2.9	7 45.1	+11 3.5	+0.1303	0.5705	0.1155	+31	-37
σ Scorpïi	3.4	0.51	5.0	25 20.7	13 6.5	-7 47.3	-1.1840	0.5724	0.1012	-47	-90
α Scorpïi	1.2	-0.54	-5.1	-26 12.2	16 26.3	-4 35.1	-0.6101	0.5733	-0.0919	-9	-89
τ Scorpïi	3.2	-0.57	-4.8	-28 0.1	19 1.8	-2 5.6	+1.0430	0.5741	-0.0846	+62	+20

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 5800	7.5	-0.64	-6.2	-26 51.7	11 10 32.0	-11 11.2	-1.1210	0.5765	-0.0398	-46	-90
43 Ophiuchi	5.8	0.66	6.2	28 2.6	14 11.0	-7 40.6	-0.0018	0.5769	0.0290	+16	-44
3 Sagittarii	4-6	0.69	6.9	27 47.6	23 57.2	+1 42.9	-0.4089	0.5758	-0.0002	-7	-71
B. A. C. 6127	5.1	0.71	7.2	28 28.2	12 8 16.2	+9 42.9	+0.4102	0.5741	+0.0240	+39	-21
4 Sagittarii	3-7	0.71	8.4	27 6.0	23 46.6	+0 38.1	-0.3341	0.5678	0.0677	+3	-65
NEW MOON.											
MERCURY				-18 42.1	15 14 27.6	-10 49.5	-0.5794	0.4667	+0.1757	+5	-82
7 Capricorni	5.1	-0.50	-8.5	20 15.1	14 29.3	-10 48.2	+1.1150	0.5217	0.2007	+70	+21
30 Capricorni	5.5	0.47	8.1	18 25.4	21 16.4	-4 13.6	+0.5151	0.5172	0.2101	+64	-17
31 Capricorni	6.7	0.47	8.2	17 54.0	21 26.1	-4 4.2	-0.0200	0.5165	0.2102	+35	-45
1 Capricorni	4.4	-0.46	-8.1	-17 16.7	23 57.5	-2 6.5	-0.2714	0.5150	+0.2129	+23	-60
42 Capricorni	5.6	0.41	7.4	14 30.8	16 9 25.3	+7 33.5	-1.1180	0.5079	0.2246	-24	-90
44 Capricorni	6.1	0.40	7.4	14 52.6	10 12.3	+8 19.2	-0.5445	0.5079	0.2255	+11	-78
45 Capricorni	6.3	0.40	7.4	15 13.7	10 41.6	+8 47.7	-0.0493	0.5072	0.2259	+36	-47
B. A. C. 7558	8.0	0.40	7.4	16 26.9	10 49.9	+8 55.7	+1.3190	0.5072	0.2260	+74	+40
4 Capricorni	5.2	-0.38	-7.0	-14 2.6	15 33.8	-10 28.6	-0.2379	0.5039	+0.2308	+27	-57
21 Aquarii	6.8	0.34	6.2	11 20.0	17 0 49.5	-1 28.9	-1.0400	0.4979	0.2386	-16	-90
22 Aquarii	5.6	0.33	6.3	12 4.7	0 52.2	-1 26.3	-0.2106	0.4978	0.2386	+30	-56
B. A. C. 7740	7.0	0.33	6.2	11 34.8	1 46.5	-0 33.4	-0.5429	0.4978	0.2395	+13	-78
40 Aquarii	7.0	0.32	6.3	12 26.5	2 23.1	+0 2.1	+0.5522	0.4973	0.2402	+71	-15
67 Aquarii	6.4	-0.25	-4.4	-7 30.5	18 50.7	-7 57.5	-0.8460	0.4897	+0.2503	-2	-90
B. A. C. 7986	5.9	0.22	3.6	5 32.6	18 1 34.1	-1 24.9	-1.3260	0.4870	0.2531	-37	-90
B. A. C. 7993	6.6	0.21	3.5	5 22.1	2 45.6	-0 15.3	-1.2160	0.4864	0.2536	-26	-90
B. A. C. 8017	6.1	0.19	3.3	5 16.4	5 9.5	+2 4.6	-0.7155	0.4859	0.2545	+6	-90
B. A. C. 8094	5.4	0.15	2.6	4 3.8	13 9.8	+9 52.3	-0.0055	0.4839	0.2567	+43	-44
11 Piscium	6.4	-0.10	-1.7	-2 21.9	21 7.2	-6 22.9	+0.1607	0.4821	+0.2580	+53	-36
12 Piscium	6.8	0.11	1.5	1 36.6	21 9.3	-6 20.9	-0.6668	0.4821	0.2580	+10	-87
13 Piscium	6.4	0.10	1.5	1 39.6	22 33.8	-4 58.6	-0.2476	0.4819	0.2580	+31	-59
14 Piscium	5.9	0.09	1.4	-1 49.3	23 48.9	-3 45.5	+0.2531	0.4816	0.2583	+58	-31
21 Piscium	5.8	0.04	-0.1	+0 29.9	19 8 38.5	+4 50.2	-0.0370	0.4811	0.2583	+42	-46
25 Piscium	6.4	-0.04	+0.3	+1 30.7	10 43.7	+6 52.1	-0.6227	0.4811	+0.2581	+12	-83
51 Piscium	5.8	+0.11	3.1	6 22.9	20 9 16.0	+4 48.8	-0.2474	0.4834	0.2528	+31	-56
101 Piscium	6.3	0.40	7.9	14 7.9	21 20 18.5	-9 6.1	-0.2767	0.4975	0.2307	+30	-54
104 Piscium	7.5	0.42	7.9	13 45.6	22 9.7	-7 18.1	+0.5507	0.4989	0.2290	+79	-11
4 Arietis	5.7	0.45	9.0	16 26.4	22 2 51.5	-2 44.3	-1.3220	0.5019	0.2244	-40	-74
B. A. C. 549	8.2	+0.45	+9.0	+16 30.2	2 56.9	-2 39.1	-1.3720	0.5019	+0.2242	-50	-73
1 Arietis	5.7	0.51	9.5	17 18.7	7 38.4	+1 54.2	-1.2140	0.5054	0.2193	-28	-73
23 Arietis	7.5	0.64	10.5	19 12.9	18 45.2	-11 18.9	-0.9251	0.5136	0.2057	7	-71
26 Arietis	6.0	0.72	10.7	19 23.8	23 0 28.2	-5 46.3	+0.0326	0.5183	0.1980	+46	-33
4 Arietis	6.0	0.80	11.0	19 34.3	6 12.5	-0 12.8	+0.9530	0.5217	0.1895	+90	+17
B. A. C. 920	7.0	+0.90	+11.7	+21 12.4	14 5.2	+7 24.8	+0.6234	0.5297	+0.1767	+88	0
1 Arietis	4.6	0.90	11.6	20 55.7	14 15.0	+7 34.2	+0.9528	0.5297	0.1763	+90	+19
64 Arietis	5.7	1.07	12.7	24 21.5	24 1 48.6	-5 15.2	-0.8269	0.5406	0.1550	-3	-66
7 Tauri	6.0	1.14	12.6	24 7.1	6 22.9	-0 50.3	+0.1196	0.5443	0.1456	+51	-22
11 Tauri	6.7	1.20	12.8	24 59.8	9 11.0	+1 52.0	-0.4207	0.5470	0.1397	+21	-50
1 Pleiadum	6.3	+1.22	+12.5	+23 57.9	10 58.9	+3 36.2	+0.9294	0.5487	+0.1357	+90	+23
17 Tauri	4.3	1.22	12.4	23 47.4	11 1.0	+3 38.2	+1.1219	0.5487	0.1357	+90	+37
18 Tauri	6.3	1.23	12.6	24 31.0	11 7.8	+3 44.7	+0.3596	0.5489	0.1355	+66	-9
19 Tauri	5.0	1.22	12.5	24 8.6	11 9.4	+3 46.3	+0.7621	0.5491	0.1355	+90	+13
21 Tauri	7.0	1.23	12.5	24 14.0	11 27.8	+4 4.1	+0.7084	0.5498	0.1348	+90	+10
22 Tauri	7.0	+1.23	+12.5	+24 12.4	11 31.5	+4 7.6	+0.7459	0.5498	+0.1346	+90	+12
24 Tauri	8.0	1.23	12.4	23 47.8	12 6.3	+4 41.2	+1.2000	0.5498	0.1332	+90	+52
7 Tauri	3.1	1.23	12.4	23 47.2	12 9.8	+4 44.6	+1.2770	0.5498	0.1332	+90	+54
1171 Tauri	7.8	1.25	12.4	24 1.7	12 36.3	+5 10.2	+1.0800	0.5507	0.1321	+90	+34
B. A. C. 1192	6.0	1.26	12.8	25 16.1	13 22.4	+5 54.6	-0.1440	0.5514	0.1305	+36	-34
7 Tauri	6.0	+1.40	+12.8	+26 12.8	22 12.2	-9 34.6	-0.0867	0.5589	+0.1098	+39	-28
6 Tauri	5.3	+1.47	+12.9	+27 6.3	25 2 12.6	-5 42.9	-0.6103	0.5623	+0.0999	+10	57

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 1444	5.0	+1.63	+12.7	+28 25.0	25 10 52.8	+ 2 37.9	-1.2230	0.5697	+0.0770	-41	-62
W. iv, 1421	6.0	1.81	11.6	27 54.2	22 22.0	-10 19.4	+0.0192	0.5789	0.0444	+45	-17
22 Aurigæ	7.0	1.90	11.4	28 50.7	26 3 46.0	- 5 8.2	-0.7635	0.5813	0.0284	0	-61
β Tauri	1.8	1.91	11.2	28 31.4	4 55.1	- 4 1.8	-0.3971	0.5820	0.0250	+21	-37
B. A. C. 1772	6.3	2.01	10.6	29 9.5	10 0.5	+ 0 51.4	-0.9661	0.5846	+0.0095	-15	-61
136 Tauri	5.3	+2.06	+ 9.6	+27 35.4	15 29.7	+ 6 7.4	+0.6630	0.5870	-0.0076	+90	+20
49 Aurigæ	5.7	2.27	7.5	28 6.3	27 7 36.2	- 2 25.4	-0.4005	0.5910	0.0586	+21	-41
54 Aurigæ	6.0	2.30	7.1	28 21.4	9 16.1	- 0 49.5	-0.7595	0.5912	0.0639	0	-62
25 Geminorum	6.5	2.30	7.0	28 17.6	9 57.4	- 0 9.7	-0.7403	0.5910	0.0660	+ 1	-62
W. vi, 1656	8.2	2.36	5.4	26 59.5	18 35.9	+ 8 7.5	-0.0999	0.5909	-0.0933	+38	-27
47 Geminorum	6.0	+2.39	+ 5.0	+27 1.7	21 30.4	+10 54.9	-0.4210	0.5907	-0.1021	+20	-46
49 Geminorum	7.2	2.37	4.7	25 55.4	22 4.7	+11 27.8	+0.6404	0.5905	0.1040	+90	+10
A Geminorum	5.7	2.38	3.9	25 15.1	28 2 11.9	- 8 34.9	+0.8652	0.5899	0.1165	+90	+21
c Geminorum	6.0	2.45	2.5	26 1.9	10 10.6	- 0 55.6	-0.9469	0.5872	0.1401	-11	-64
κ Geminorum	3.7	2.42	2.3	24 38.8	10 19.8	- 0 46.8	+0.4265	0.5872	0.1402	+71	- 5
μ Cancri	6.3	+2.42	+ 0.7	+22 55.9	18 54.8	+ 7 27.7	+0.8392	0.5838	-0.1644	+90	+15
B. A. C. 2703	7.5	2.42	+ 0.7	22 45.4	19 1.7	+ 7 34.3	+0.9963	0.5838	0.1646	+90	+25
η Cancri	5.4	2.41	- 1.2	20 47.7	29 5 26.8	- 6 25.2	-1.0960	0.5785	0.1914	+90	+30
38 Cancri	7.0	2.40	1.8	20 8.7	8 16.3	- 3 52.2	+1.1920	0.5773	0.1982	+90	+37
39 Cancri	7.0	2.40	1.8	20 22.5	8 25.7	- 3 33.2	+0.9322	0.5768	0.1986	+90	+17
40 Cancri	7.3	+2.40	- 1.8	+20 20.3	8 27.8	- 3 31.2	+0.9625	0.5768	-0.1986	+90	+19
B. A. C. 2919	7.3	2.40	1.8	20 2.2	8 32.3	- 3 26.9	+1.2480	0.5768	0.1988	+90	+43
c Cancri	7.1	2.40	1.9	20 5.3	8 40.2	- 3 19.4	+1.1690	0.5768	0.1990	+90	+35
B. A. C. 2925	7.7	2.39	1.9	19 56.9	8 46.2	- 3 13.6	+1.2900	0.5768	0.1994	+90	+48
B. A. C. 2931	7.5	2.40	1.9	20 14.7	9 7.8	- 2 52.8	+0.9223	0.5768	0.2003	+90	+17
γ Cancri	4.9	+2.44	- 2.0	+21 50.5	9 41.7	- 2 20.2	-0.7843	0.5763	-0.2016	+ 1	-68
78 Cancri	7.8	2.35	3.8	17 53.3	20 16.9	+ 7 50.8	+0.8925	0.5703	0.2244	+90	+11
80 Cancri	6.8	2.36	4.0	18 28.1	21 28.7	+ 8 59.9	+0.0513	0.5689	0.2269	+47	-33
83 Cancri	5.7	2.35	4.4	18 8.7	30 0 24.7	+11 49.4	-0.3061	0.5671	0.2325	+28	-52
8 Leonis	5.7	2.30	5.7	16 54.1	8 1.4	- 4 50.7	-0.8933	0.5628	0.2459	- 5	-73
ψ Leonis	6.0	+2.25	- 6.0	+14 29.7	10 53.4	- 2 5.1	+0.7789	0.5608	-0.2503	+90	+ 5
23 Leonis	6.3	2.22	6.3	13 33.0	14 1.4	+ 0 56.1	+0.9223	0.5591	0.2552	+90	+10
v Leonis	5.3	2.20	6.7	12 56.3	17 7.6	+ 3 55.8	+0.7288	0.5575	0.2595	+90	- 2
a Leonis	1.3	2.18	7.3	12 28.4	21 32.7	+ 8 11.2	+0.0280	0.5547	0.2653	+46	-39
44 Leonis	6.0	2.14	7.9	9 18.7	31 4 57.9	- 8 39.4	+1.1550	0.5512	0.2735	+90	+23
45 Leonis	6.0	+2.11	- 8.1	+10 17.4	6 1.0	- 7 38.5	-0.1005	0.5504	-0.2745	+39	-47
ρ Leonis	4.0	2.09	8.3	9 47.9	8 18.6	- 5 25.6	-0.2883	0.5496	0.2767	+29	-58
49 Leonis	6.0	2.08	8.4	9 11.2	9 18.4	- 4 28.0	+0.0824	0.5491	0.2774	+49	-38
37 Sextantis	6.3	2.02	8.7	6 55.2	14 15.4	+ 0 18.7	+0.9393	0.5468	0.2813	+90	+ 7
38 Sextantis	7.8	2.02	8.7	6 53.6	14 48.4	+ 0 50.6	+0.8125	0.5466	0.2816	+90	0
56 Leonis	6.0	+1.99	- 9.1	+ 6 44.2	18 43.6	+ 4 37.8	-0.1434	0.5449	-0.2841	+36	-51
c Leonis	5.3	+1.96	- 9.4	+ 6 39.4	20 51.6	+ 6 41.3	-0.6705	0.5439	-0.2853	+10	-83

FEBRUARY.

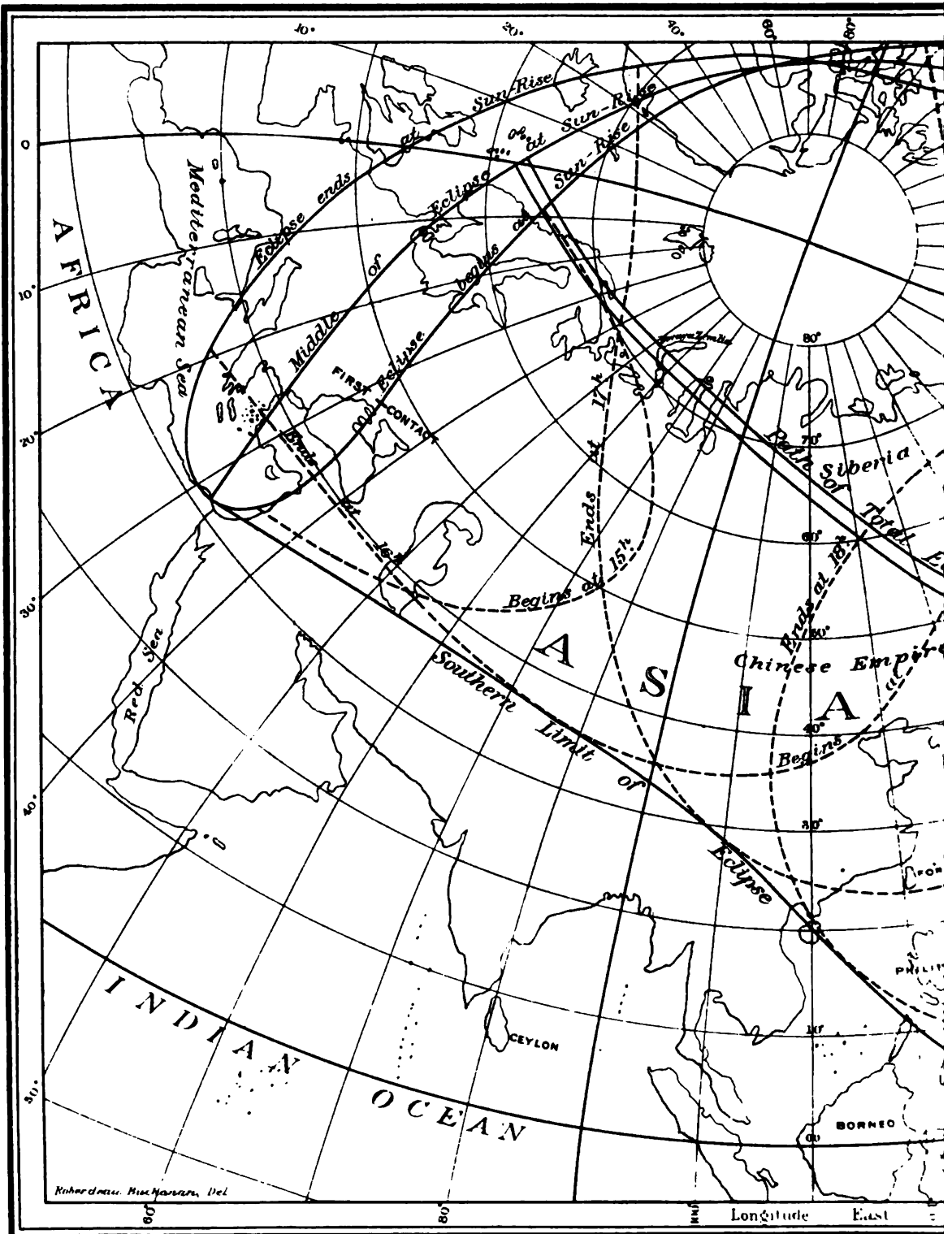
79 Leonis	6.0	+1.86	- 9.6	+ 1 58.5	1 7 28.7	- 7 3.1	+0.9095	0.5405	-0.2890	+90	+ 4
82 Leonis	6.9	1.87	9.9	3 52.2	8 13.0	- 6 20.3	-1.1800	0.5403	0.2891	-22	-86
83 Leonis	6.5	1.87	10.0	3 34.6	8 17.9	- 6 15.5	-0.9131	0.5403	0.2891	- 4	-86
τ Leonis	5.1	1.86	10.0	+ 3 25.5	9 15.5	- 5 19.9	-1.0400	0.5401	0.2893	-12	-87
B. A. C. 4134	6.3	1.59	10.4	- 3 22.8	2 8 25.3	- 6 56.3	-0.9668	0.5371	0.2850	+ 8	-90
χ Virginis	5.2	+1.46	- 9.8	- 7 25.6	18 9.1	+ 2 27.8	+0.3250	0.5376	-0.2792	+61	-27
28 Virginis	7.0	1.45	10.0	6 55.9	19 24.0	+ 3 40.2	-0.5184	0.5376	0.2781	+16	-75
ψ Virginis	5.2	1.38	9.8	8 58.7	8 1 5.5	+ 9 10.4	-0.0384	0.5384	0.2732	+40	-46
ζ Virginis	5.9	1.31	9.8	10 11.3	7 17.2	- 8 50.5	-0.4992	0.5395	0.2670	+16	-74
50 Virginis	6.3	1.31	10.0	9 46.7	8 8.3	- 8 1.2	-1.1380	0.5398	0.2656	-22	-90
i Virginis	5.7	+1.22	- 9.7	-12 10.2	15 50.5	- 0 34.6	-0.7499	0.5419	-0.2569	+ 1	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

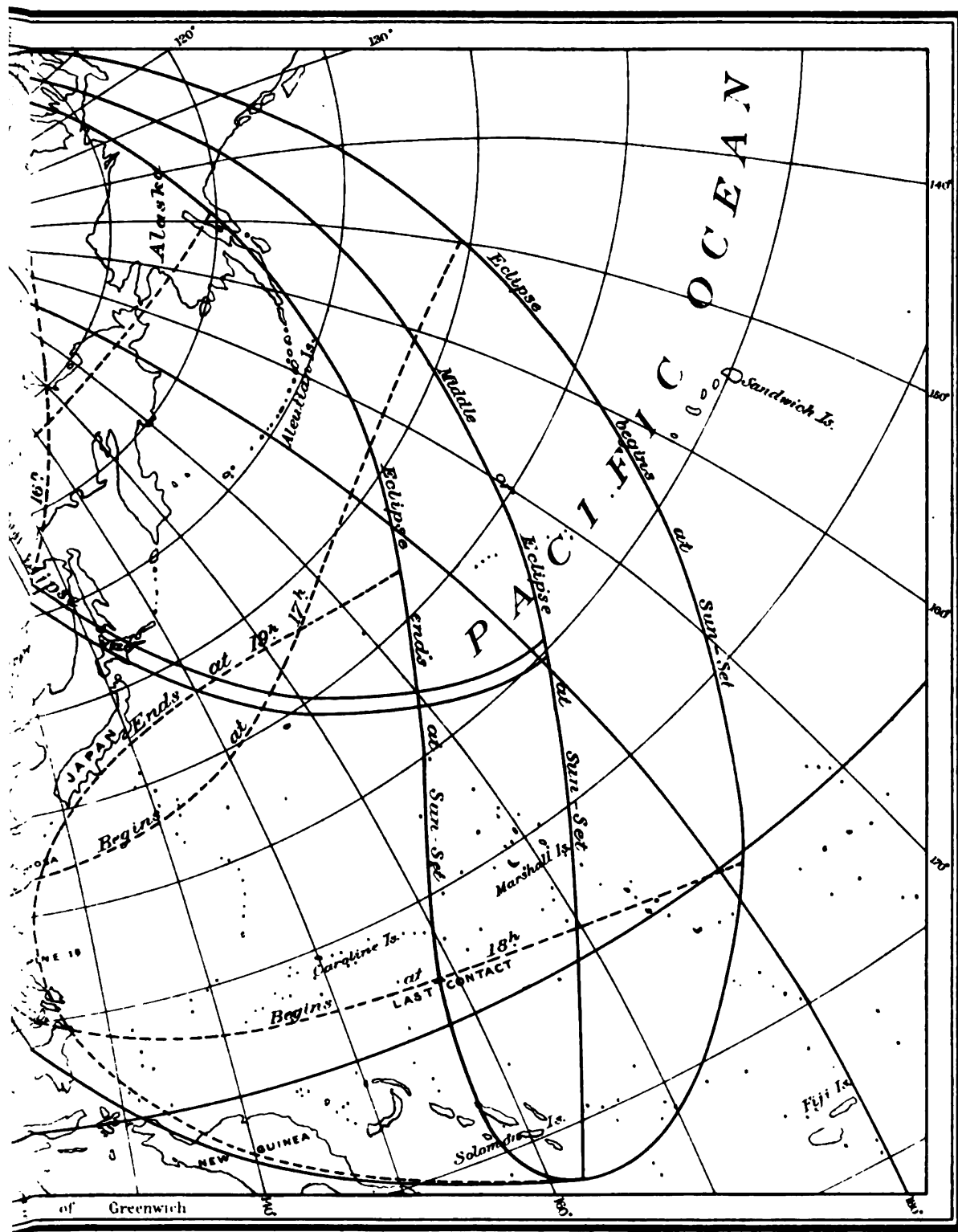
THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
		\pm	\pm	\circ	\circ	h	m				\circ		
75 Virginia	6.0	+1.18	-9.0	-14 49.9	3 18 35.9	+2 6.2	+1.2360	0.5428	-0.2533	+75	+29		
83 Virginia	6.0	1.14	8.8	15 39.6	23 49.1	+7 7.6	+0.7727	0.5442	0.2458	+71	-4		
85 Virginia	6.5	1.13	8.9	15 14.9	4 0 18.8	+7 36.4	+0.2346	0.5443	0.2450	+51	-32		
B. A. C. 4923	7.3	0.80	8.1	20 56.8	5 7 39.4	-10 9.3	-0.7900	0.5572	0.1871	-9	-90		
42 Libræ	5.7	0.61	7.5	23 23.9	6 1 44.1	+7 15.7	-1.1860	0.5643	0.1443	-42	-90		
B. A. C. 5197	6.0	+0.59	-7.1	-24 23.5	4 1.6	+9 28.1	-0.5675	0.5650	-0.1387	-2	-84		
b Scorpïi	5.3	0.57	7.0	25 26.2	6 8.7	+11 30.4	+0.2287	0.5657	0.1330	+38	-32		
A ² Scorpïi	5.2	0.56	7.2	25 1.1	7 14.6	-11 26.2	-0.3499	0.5659	0.1301	+8	-66		
B. A. C. 5253	5.8	0.56	7.4	24 13.5	7 22.5	-11 18.6	-1.1910	0.5663	0.1298	-44	-90		
B. A. C. 5255	6.0	0.55	7.1	25 6.2	7 29.4	-11 12.0	-0.2929	0.5663	0.1297	+11	-62		
3 Scorpïi	7.7	+0.53	-7.2	-24 56.2	7 40.7	-11 1.0	-0.4906	0.5665	-0.1291	+1	-77		
4 Scorpïi	6.3	0.55	6.9	25 57.7	8 0.6	-10 41.9	+0.5323	0.5665	0.1281	+55	-15		
B. A. C. 5314	5.7	0.52	7.1	25 34.6	11 15.3	-7 34.6	-0.2710	0.5675	0.1197	+11	-61		
B. A. C. 5347	6.0	0.50	7.0	26 2.9	13 12.4	-5 41.8	-0.0087	0.5683	0.1144	+24	-45		
a Scorpïi	1.2	0.41	7.0	26 12.2	21 55.9	+2 41.9	-0.7416	0.5705	0.0904	-17	-90		
r Scorpïi	3.2	+0.39	-6.5	-28 0.1	7 0 32.4	+5 12.4	+0.9158	0.5710	-0.0830	+62	+10		
B. A. C. 5800	7.5	0.23	7.2	26 51.7	16 10.4	-3 45.4	-1.2370	0.5722	0.0384	-57	90		
43 Ophiuchi	5.8	0.20	6.8	28 2.6	19 51.2	-0 13.0	0.1110	0.5718	-0.0277	+10	-51		
3 Sagittarii	4.6	+0.12	7.0	27 47.6	8 5 45.0	+9 18.2	0.5116	0.5706	+0.0009	-12	-79		
9 Sagittarii	3.7	-0.04	7.3	27 6.0	9 5 54.6	+8 33.6	-0.4111	0.5622	0.0681	-1	-71		
σ Sagittarii	2.3	-0.06	-7.4	-26 25.6	10 0.7	-11 39.3	-0.8324	0.5601	+0.0789	-23	-90		
r Sagittarii	3.6	0.03	7.1	27 49.4	14 59.8	-6 40.9	+1.0940	0.5572	0.0916	+62	+25		
ψ Sagittarii	5.4	0.10	7.5	25 26.2	18 46.0	-3 2.9	-1.1100	0.5550	0.1011	-40	-90		
A ¹ Sagittarii	5.7	0.13	7.5	24 56.9	10 3 47.2	+5 39.2	0.6323	0.5493	0.1225	-6	-90		
A ² Sagittarii	4.7	0.13	7.5	25 6.9	4 4.9	+5 56.3	-0.4162	0.5493	0.1232	+4	-71		
4 Capricorni	6.1	-0.18	-7.6	-22 8.0	22 59.2	+0 12.2	-0.9353	0.5360	+0.1631	-20	-90		
B. A. C. 7049	6.5	0.19	7.4	22 44.3	11 4 24.0	+5 26.4	+0.6336	0.5319	0.1732	+65	-9		
NEW MOON.													
B. A. C. 8994	5.4	0.24	3.3	4 3.8	14 20 19.6	-5 10.4	+0.0592	0.4850	0.2581	+47	-41		
11 Piscium	6.4	-0.24	-2.6	-2 21.8	15 4 16.6	+2 34.1	+0.2295	0.4834	+0.2594	+56	-33		
12 Piscium	6.8	0.25	2.5	1 36.5	4 18.8	+2 36.2	-0.5995	0.4834	0.2594	+13	-82		
13 Piscium	6.4	0.25	2.4	1 39.6	5 43.1	+3 58.4	-0.1758	0.4834	0.2595	+35	-54		
14 Piscium	5.9	0.24	2.3	-1 49.3	6 58.3	+5 11.5	+0.3275	0.4832	0.2596	+62	-27		
21 Piscium	5.8	0.19	1.3	+0 29.9	15 47.3	-10 13.3	+0.0389	0.4823	0.2596	+46	-42		
25 Piscium	6.4	0.19	-1.0	+1 30.7	17 52.4	-8 11.6	-0.5445	0.4823	+0.2595	+16	-77		
51 Piscium	5.8	-0.11	+1.4	6 22.9	16 16 24.9	-10 14.6	-0.1573	0.4843	0.2536	+36	-52		
101 Piscium	6.3	+0.07	6.0	14 7.9	18 3 36.4	-0 0.5	-0.1847	0.4969	0.2300	+34	-49		
104 Piscium	7.5	0.10	6.0	13 45.6	5 28.8	+1 48.7	+0.6485	0.4976	0.2282	+88	-6		
4 Arietis	5.7	0.12	7.1	16 26.4	10 13.2	+6 25.1	-1.2350	0.5000	0.2237	-30	-74		
ι Arietis	5.7	+0.16	+7.6	+17 18.7	15 3.1	+11 6.6	-1.1270	0.5030	+0.2182	-21	-73		
B. A. C. 686	7.2	0.23	8.6	19 7.7	23 35.9	-4 35.6	-1.3020	0.5084	0.2080	-40	-71		
23 Arietis	7.5	0.27	8.8	19 12.8	19 2 18.1	-1 58.3	-0.8373	0.5099	0.2045	-2	-71		
26 Arietis	6.0	0.33	9.1	19 23.8	8 6.2	+3 39.3	+0.1244	0.5142	0.1964	+51	-28		
μ Arietis	6.0	0.41	9.5	19 34.3	13 56.1	+9 18.5	+1.0520	0.5186	0.1878	+90	+24		
B. A. C. 920	7.0	+0.51	+10.3	+21 12.4	21 57.4	-6 55.3	+0.7166	0.5247	+0.1748	+90	+5		
ε Arietis	4.6	0.51	10.2	20 55.7	22 7.4	-6 45.7	+1.0490	0.5247	0.1744	+90	+26		
64 Arietis	5.7	0.66	11.7	24 21.5	20 9 55.3	+4 39.3	-0.7509	0.5342	0.1529	+2	-64		
7 Tauri	6.0	0.73	11.6	24 7.1	14 35.8	+9 10.5	+0.2040	0.5384	0.1437	+56	-17		
γ Pleiadum	6.3	0.82	11.6	23 57.9	19 18.3	-10 16.5	+1.0210	0.5418	0.1339	+90	+29		
17 Tauri	4.3	+0.82	+11.6	+23 47.4	19 20.4	-10 14.7	+1.2140	0.5420	+0.1339	+90	+46		
18 Tauri	6.3	0.82	11.8	24 31.0	19 27.4	-10 8.0	+0.4448	0.5420	0.1335	+72	-4		
19 Tauri	5.0	0.82	11.7	24 8.6	19 29.1	-10 6.3	+0.8519	0.5420	0.1335	+90	+18		
21 Tauri	7.0	0.82	11.7	24 14.0	19 47.9	-9 47.9	+0.7960	0.5424	0.1327	+90	+15		
22 Tauri	7.0	0.83	11.7	24 12.4	19 51.8	-9 44.2	+0.8337	0.5424	0.1325	+90	+17		
B. A. C. 1171	7.8	+0.84	+11.7	+24 1.7	20 58.1	-8 40.2	+1.1710	0.5431	+0.1303	+90	+42		

TOTAL ECLIPSE



Note. The hours of beginning and ending

OF AUGUST 8TH 1896.



are expressed in Greenwich Mean Time

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle //	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 1192	6.0	+0.85	+12.1	+25 16.1	20 21 45.4	- 7 54.5	-0.0666	0.5442	+0.1284	+40	-30
ϕ Tauri	6.0	1.00	12.5	26 12.8	21 6 48.6	+ 0 49.7	-0.0107	0.5512	0.1079	+44	-24
ϕ Tauri	5.3	1.07	12.6	27 6.3	10 55.3	+ 4 47.6	-0.5448	0.5543	0.0980	+14	-53
B. A. C. 1444	5.7	1.24	12.8	28 25.0	19 49.8	-10 37.2	-1.1670	0.5608	0.0755	-33	-62
W. iv, 1421	6.0	1.45	11.9	27 54.2	22 7 38.6	+ 0 45.2	+0.0864	0.5687	0.0434	+49	-13
22 Aurigæ	7.0	+1.56	+11.9	+28 50.7	13 11.7	+ 6 5.6	-0.7115	0.5717	+0.0276	+ 3	-61
β Tauri	1.8	1.58	11.7	28 31.4	14 22.8	+ 7 14.0	-0.3424	0.5725	0.0242	+24	-35
B. A. C. 1772	6.3	1.69	11.4	29 9.5	19 36.9	-11 44.1	-0.9183	0.5750	+0.0089	-11	-61
136 Tauri	5.3	1.76	10.7	27 35.4	23 1 15.4	- 6 18.8	+0.7268	0.5775	-0.0080	+90	+23
49 Aurigæ	5.7	2.04	8.6	28 6.3	17 48.1	+ 9 34.8	-0.3583	0.5819	-0.0582	+24	-38
54 Aurigæ	6.0	+2.09	+ 8.4	+28 21.4	19 30.4	+11 13.0	-0.7226	0.5821	-0.0635	+ 2	-62
25 Geminorum	6.5	2.10	8.2	28 17.6	20 12.8	+11 53.7	-0.7017	0.5824	0.0657	+ 4	-61
39 Geminorum	6.3	2.16	6.7	26 13.1	24 3 6.8	- 5 28.8	+0.9086	0.5828	0.0866	+90	+27
40 Geminorum	6.3	2.16	6.6	26 3.4	3 22.4	- 5 13.7	+1.0520	0.5829	0.0875	+90	+23
W. vi, 1656	8.2	2.19	6.6	26 59.5	5 3.9	- 3 36.4	-0.0598	0.5830	0.0925	+41	-25
47 Geminorum	6.0	+2.24	+ 6.2	+27 1.7	8 2.0	- 0 45.3	-0.3859	0.5828	-0.1014	+23	-44
49 Geminorum	7.2	2.22	5.8	25 55.4	8 37.4	- 0 11.3	+0.6855	0.5828	0.1031	+90	+13
A Geminorum	5.7	2.26	5.0	25 15.1	12 49.8	+ 3 51.1	+0.9078	0.5825	0.1156	+90	+24
c Geminorum	6.0	2.39	3.7	26 2.0	20 57.8	+11 39.7	-0.9212	0.5811	0.1390	- 9	-64
k Geminorum	3.7	2.36	3.3	24 38.9	21 7.3	+11 49.8	+0.4615	0.5794	0.1395	+74	- 4
μ Cancri	6.3	+2.41	+ 1.5	+22 55.9	25 5 50.7	- 3 48.1	+0.8708	0.5784	-0.1634	+90	+17
B. A. C. 2703	7.5	2.41	+ 1.4	22 45.4	5 57.7	- 3 41.4	+1.0270	0.5784	0.1637	+90	+27
η Cancri	5.4	2.46	- 0.7	20 47.7	16 30.4	+ 6 26.7	+1.1220	0.5749	0.1907	+90	+32
38 Cancri	7.0	2.46	1.5	20 8.7	19 21.6	+ 9 11.4	+1.2170	0.5736	0.1975	+90	+39
39 Cancri	7.0	2.47	1.5	20 22.5	19 31.0	+ 9 20.4	+0.9552	0.5733	0.1979	+90	+19
40 Cancri	7.3	+2.47	- 1.5	+20 20.3	19 33.1	+ 9 22.4	+0.9851	0.5733	-0.1982	+90	+21
B. A. C. 2919	7.3	2.46	1.6	20 2.2	19 37.7	+ 9 26.8	+1.2720	0.5733	0.1982	+90	+45
c Cancri	7.1	2.47	1.6	20 5.3	19 46.3	+ 9 35.0	+1.1920	0.5733	0.1986	+90	+37
B. A. C. 2925	7.7	2.46	1.6	19 56.9	19 51.7	+ 9 40.3	+1.3150	0.5733	0.1987	+90	+52
B. A. C. 2931	7.5	2.47	1.6	20 14.7	20 13.4	+10 1.1	+0.9450	0.5733	0.1996	+90	+18
γ Cancri	4.9	+2.51	- 1.4	+21 50.5	20 47.7	+10 34.1	-0.7663	0.5729	-0.2009	+ 2	-64
71 Cancri	8.0	2.48	3.7	17 48.2	26 6 4.9	- 4 29.8	+1.2960	0.5690	0.2216	+90	+45
78 Cancri	7.8	2.49	3.9	17 53.5	7 26.4	- 3 11.4	+0.9061	0.5685	0.2245	+90	+13
80 Cancri	6.8	2.51	4.0	18 28.1	8 38.4	- 2 2.1	+0.0613	0.5679	0.2269	+48	-32
83 Cancri	5.7	2.52	4.5	18 8.7	11 34.7	+ 0 47.6	-0.2943	0.5666	0.2326	+28	-51
7 Leonis	6.3	+2.47	- 6.2	+14 50.5	18 42.6	+ 7 39.7	+1.2690	0.5633	-0.2460	+90	+38
8 Leonis	5.7	2.51	6.0	16 54.1	19 10.6	+ 8 6.6	-0.8831	0.5632	0.2465	- 4	-73
11 Leonis	6.8	2.47	6.4	14 48.9	19 37.2	+ 8 32.2	+1.0710	0.5630	0.2473	+90	+21
ψ Leonis	6.0	2.48	6.8	14 29.7	22 2.1	+10 51.8	+0.7834	0.5616	0.2513	+90	+ 2
23 Leonis	6.3	+2.47	7.3	13 33.0	27 1 9.2	-10 7.8	+0.9237	0.5606	0.2563	+90	+10
ν Leonis	5.3	+2.47	- 7.8	+12 56.3	4 14.1	- 7 9.6	+0.7288	0.5594	-0.2608	+90	- 2
a Leonis	1.3	2.47	8.5	12 28.4	8 36.9	- 2 56.4	+0.0292	0.5574	0.2670	+46	-39
44 Leonis	6.0	2.43	9.7	9 18.6	15 56.8	+ 4 7.8	+1.1450	0.5549	0.2757	+90	+22
45 Leonis	6.0	2.44	9.8	10 17.3	16 59.1	+ 5 7.9	-0.1030	0.5546	0.2770	+39	-47
ρ Leonis	4.0	2.44	10.1	9 50.3	19 14.7	+ 7 18.8	-0.2877	0.5537	0.2790	+29	-57
49 Leonis	6.0	+2.43	-10.3	+ 9 11.1	20 13.5	+ 8 15.4	+0.0784	0.5531	-0.2802	+48	38
37 Sextantis	6.3	2.39	11.0	6 55.1	28 1 5.6	-11 2.8	+0.9258	0.5517	0.2843	+90	+ 6
38 Sextantis	7.8	2.39	11.1	6 53.5	1 38.0	-10 31.5	+0.7986	0.5517	0.2847	+90	- 2
56 Leonis	6.6	2.39	11.5	6 44.2	5 28.6	- 6 49.0	-0.1501	0.5504	0.2876	+36	-51
c Leonis	5.3	2.38	11.8	6 39.4	7 34.1	- 4 48.0	-0.6756	0.5501	0.2888	+ 9	-83
75 Leonis	5.7	+2.33	-12.5	+ 2 34.7	14 55.7	+ 2 18.4	+1.1760	0.5483	-0.2922	+90	+21
79 Leonis	6.0	2.31	12.8	1 18.5	17 56.4	+ 5 12.7	+0.8857	0.5480	0.2934	+90	+ 2
82 Leonis	6.9	2.31	12.9	3 52.2	18 39.5	+ 5 54.4	-1.1800	0.5480	0.2934	-22	-86
83 Leonis	6.5	2.31	12.9	3 34.6	18 44.3	+ 5 59.0	-0.9166	0.5480	0.2934	- 4	-86
r Leonis	5.1	2.32	13.0	+ 3 25.7	19 40.5	+ 6 53.2	-1.0420	0.5478	0.2938	-12	-87
B. A. C. 4134	6.3	+2.18	-14.4	- 3 22.8	29 18 8.7	+ 4 34.9	-0.9727	0.5471	-0.2905	- 8	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle //	<i>Y</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
χ Virginis	5.2	+2.09	-14.4	- 7 25.6	1 3 32.4	-10 20.9	+0.2966	0.5480	-0.2846	+59	-29
28 Virginis	7.0	2.09	14.4	6 55.9	4 44.7	- 9 11.1	-0.5328	0.5481	0.2841	+16	-76
ψ Virginis	5.2	2.04	14.5	8 58.7	10 13.9	- 3 53.3	-0.0624	0.5493	0.2787	+39	-47
δ Virginis	5.9	2.00	14.5	10 11.3	16 12.0	+ 1 52.2	-0.5119	0.5505	0.2724	+15	-75
50 Virginis	6.3	2.00	14.7	9 46.7	17 1.3	+ 2 39.3	-1.1420	0.5508	0.2715	-22	-90
i Virginis	5.7	+1.95	-14.4	-12 10.2	2 0 26.4	+ 9 48.7	-0.7600	0.5529	-0.2622	+ 1	-90
75 Virginis	6.0	1.92	13.9	14 49.9	3 5.5	-11 37.4	+1.1900	0.5535	0.2584	+75	+25
83 Virginis	6.0	1.89	13.7	15 39.6	8 7.2	- 6 46.5	+0.7345	0.5554	0.2508	+74	- 5
85 Virginis	6.5	1.89	13.8	15 14.9	8 35.7	- 6 19.0	+0.2056	0.5554	0.2500	+49	-33
B. A. C. 4722	5.8	1.83	13.5	17 43.1	21 19.4	+ 5 57.1	-0.3739	0.5601	0.2275	+17	-66
B. A. C. 4923	7.3	+1.68	-12.3	-20 56.9	3 14 50.0	- 1 11.1	-0.7977	0.5665	-0.1903	-90	- 9
42 Libræ	5.7	1.55	11.1	23 29.0	4 8 21.8	- 8 19.1	-1.1870	0.5724	0.1462	-42	-90
B. A. C. 5197	6.0	1.53	10.7	24 23.6	10 35.7	- 6 10.4	-0.5771	0.5728	0.1402	- 3	-84
δ Scorpii	5.3	1.51	10.3	25 26.3	12 39.5	- 4 11.3	+0.2103	0.5733	0.1347	+37	-32
A ² Scorpii	5.2	1.50	10.4	25 1.2	13 43.7	- 3 9.6	-0.3606	0.5733	0.1317	+ 8	-67
B. A. C. 5253	5.8	+1.50	-10.6	-24 13.6	13 51.3	- 3 2.3	-1.1910	0.5734	-0.1314	-44	-90
B. A. C. 5255	6.0	1.50	10.4	25 6.3	13 58.0	- 2 55.9	-0.3046	0.5734	0.1311	+11	-63
3 Scorpii	6.7	1.50	10.4	24 56.3	14 9.1	- 2 45.2	-0.4996	0.5736	0.1305	0	-77
4 Scorpii	6.3	1.50	10.1	25 57.8	14 28.5	- 2 26.5	+0.5100	0.5736	0.1297	+53	-16
B. A. C. 5314	5.7	1.46	10.1	25 34.7	17 38.4	+ 0 36.0	-0.2813	0.5744	0.1209	+11	-61
B. A. C. 5347	6.0	+1.45	- 9.9	-26 3.0	19 32.7	+ 2 25.9	-0.0223	0.5746	-0.1155	+23	-45
α Scorpii	1.2	1.37	9.5	26 12.3	5 4 4.5	+10 38.0	-0.7456	0.5757	0.0911	-17	-90
τ Scorpii	3.2	1.36	8.8	28 0.2	6 37.9	-10 54.6	+0.8937	0.5759	0.0837	+62	+ 9
43 Ophiuchi	5.8	1.15	8.2	28 2.6	6 1 38.7	+ 7 21.9	-0.1225	0.5744	-0.0276	+10	-51
3 Sagittarii	4.6	1.03	7.5	27 47.6	11 25.6	- 7 13.8	-0.5153	0.5719	+0.0011	-12	-80
B. A. C. 6127	5.1	+0.98	- 6.8	-28 28.2	19 47.5	+ 0 48.9	+0.3093	0.5689	+0.0251	+34	-26
B. A. C. 6194	5.1	0.93	7.0	27 4.7	23 55.6	+ 4 48.0	-1.0420	0.5670	0.0367	-40	-90
ϕ Sagittarii	3.7	0.82	6.4	27 6.0	7 11 28.2	- 8 5.5	-0.4153	0.5610	0.0683	- 1	-71
σ Sagittarii	2.3	0.78	6.4	26 25.6	15 34.2	- 4 8.4	-0.8392	0.5588	0.0789	-23	-90
τ Sagittarii	3.6	0.74	5.7	27 49.4	20 33.5	+ 0 40.1	+1.0860	0.5555	0.0915	+62	+24
ψ Sagittarii	5.4	+0.70	- 6.2	-25 26.2	8 0 20.1	+ 4 18.6	-1.1120	0.5531	+0.1008	-40	-90
λ^1 Sagittarii	5.7	0.62	5.9	24 56.9	9 23.1	-10 57.5	-0.6337	0.5466	0.1221	- 7	-90
λ^2 Sagittarii	4.7	0.62	5.8	25 6.9	9 41.0	-10 40.2	-0.4178	0.5466	0.1228	+ 4	-71
4 Capricorni	6.1	0.45	5.6	22 8.0	9 4 41.8	+ 7 42.2	-0.9380	0.5326	0.1622	-20	-90
B. A. C. 7049	6.5	0.41	5.1	22 44.3	10 9.0	-11 1.2	+0.6325	0.5288	0.1722	+65	- 9
17 Capricorni	6.0	+0.36	- 4.9	-21 53.2	18 13.7	- 3 11.9	+1.1560	0.5228	+0.1858	+68	+25
20 Capricorni	6.3	0.29	5.2	19 26.4	10 0 54.9	+ 3 16.9	-0.2466	0.5181	0.1962	+22	-58
η Capricorni	5.1	0.29	4.9	20 16.1	3 18.6	+ 5 36.1	+1.1350	0.5165	0.1996	+70	+21
30 Capricorni	5.5	0.24	4.9	18 25.4	10 12.4	-11 42.5	+0.5202	0.5122	0.2001	+64	-16
31 Capricorni	6.7	0.24	5.0	17 54.0	10 22.2	-11 33.0	-0.0201	0.5119	0.2093	+35	-45
ι Capricorni	4.4	+0.22	- 4.9	-17 16.7	12 25.6	- 9 33.4	-0.2712	0.5106	+0.2120	+23	-59
VENUS				15 11.4	21 11.5	- 1 2.9	-0.6649	0.4517	0.2065	+ 5	-90
42 Capricorni	5.6	0.15	4.8	14 30.8	22 31.8	+ 0 15.1	-1.1140	0.5046	0.2240	-24	-90
44 Capricorni	6.1	0.15	4.8	14 52.6	23 19.4	+ 1 1.3	-0.5346	0.5041	0.2247	+11	-78
45 Capricorni	6.3	0.15	4.7	15 13.7	23 49.0	+ 1 30.1	-0.0349	0.5036	0.2253	+36	-46
B. A. C. 7558	8.0	+0.16	- 4.7	-16 26.9	23 57.6	+ 1 38.4	+1.3370	0.5036	+0.2255	+74	+42
μ Capricorni	5.2	0.12	4.6	14 2.6	11 4 44.8	+ 6 17.4	-0.2207	0.5008	0.2303	+28	-56
MERCURY				14 21.6	7 29.8	+ 8 57.6	-0.7676	0.4444	0.2188	+72	- 5
ϵ^1 Aquarii	6.8	0.07	4.3	11 20.0	14 6.3	- 8 37.0	-1.0200	0.4964	0.2386	-14	-90
ϵ^2 Aquarii	5.6	0.07	4.3	12 4.7	14 9.0	- 8 34.4	-0.1844	0.4964	0.2386	+31	-54
40 Aquarii	7.0	+0.07	- 4.3	-12 26.5	15 40.8	- 7 5.1	+0.5825	0.4958	+0.2398	+73	-14
NEW MOON.											
51 Piscium	5.8	-0.17	+ 0.5	+ 6 22.9	14 22 41.3	- 2 10.8	-0.1946	0.4857	0.2542	+34	-54
101 Piscium	6.3	0.13	4.3	14 7.9	16 9 49.0	+ 7 59.5	-0.2340	0.4966	0.2297	+32	-51
104 Piscium	7.5	-0.12	+ 4.5	+13 45.6	11 41.3	+ 9 48.6	+0.6020	0.4974	+0.2277	+83	-10

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>		
		$\Delta\alpha$	$\Delta\delta$										
		α	δ		d h m	h m							
4 Arietis	5.7	-0.12	+ 5.0	+16 26.4	16 16 25.6	- 9 35.1	-1.2920	0.5016	+0.2237	-36	-74		
B. A. C. 549	8.2	0.12	5.0	16 30.2	16 31.1	- 9 29.8	-1.3420	0.5016	0.2236	-44	-73		
1 Arietis	5.7	0.10	5.5	17 18.7	21 18.7	- 4 50.4	-1.1880	0.5043	0.2183	-26	-73		
B. A. C. 686	7.2	0.05	6.3	19 7.7	17 5 49.6	+ 3 25.6	-1.3670	0.5093	0.2078	-54	71		
23 Arietis	7.5	-0.03	6.6	19 12.8	8 32.1	+ 6 3.2	-0.9012	0.5110	0.2044	- 6	-71		
26 Arietis	6.0	+0.02	+ 7.2	+19 23.7	14 21.4	+11 42.1	+0.0643	0.5151	+0.1962	+48	-31		
μ Arietis	6.0	0.08	7.7	19 34.2	20 13.0	- 6 37.1	+0.9942	0.5187	0.1873	+90	+20		
B. A. C. 920	7.0	0.15	8.5	21 12.3	18 4 17.4	+ 1 12.2	+0.6551	0.5241	0.1740	+90	+ 2		
ϵ Arietis	4.6	0.15	8.5	20 55.6	4 27.4	+ 1 21.8	+0.9900	0.5242	0.1739	+90	+22		
64 Arietis	5.7	0.26	9.9	24 21.5	16 22.0	-11 6.5	-0.8273	0.5323	0.1530	- 3	-66		
7 Tauri	6.0	+0.32	+10.0	+24 7.1	21 5.8	- 6 32.0	+0.1338	0.5359	+0.1427	+52	-21		
11 Tauri	6.7	0.35	10.4	24 59.8	19 0 0.0	- 3 43.6	-0.4200	0.5380	0.1368	+21	-50		
γ Pleiadum	6.3	0.39	10.2	23 57.9	1 52.0	- 1 55.2	+0.9552	0.5392	0.1327	+90	+25		
17 Tauri	4.3	0.39	10.1	23 47.4	1 54.2	- 1 53.2	+1.1520	0.5392	0.1327	+90	+40		
18 Tauri	6.3	0.39	10.3	24 31.0	2 1.3	- 1 46.4	+0.3759	0.5394	0.1324	+67	- 8		
19 Tauri	5.0	+0.39	+10.2	+24 8.6	2 2.9	- 1 44.8	+0.7845	0.5394	+0.1324	+90	+14		
21 Tauri	7.0	0.40	10.3	24 14.0	2 22.0	- 1 26.3	+0.7305	0.5395	0.1317	+90	+11		
22 Tauri	7.0	0.40	10.3	24 12.4	2 25.9	- 1 22.6	+0.7681	0.5395	0.1316	+90	+13		
24 Tauri	8.0	0.41	10.1	23 47.8	3 2.0	- 0 47.7	+1.2920	0.5400	0.1303	+90	+57		
B. A. C. 1171	7.8	0.41	10.2	24 1.7	3 33.2	- 0 17.5	+1.1080	0.5405	0.1292	+90	+36		
B. A. C. 1192	6.0	+0.42	+10.6	+25 16.1	4 21.1	+ 0 28.7	-0.1416	0.5409	+0.1276	+36	-34		
ρ Tauri	6.0	0.54	11.1	26 12.8	13 33.1	+ 9 21.8	-0.0868	0.5473	0.1069	+39	-28		
ϕ Tauri	5.3	0.60	11.5	27 6.3	17 44.4	-10 35.7	-0.6277	0.5499	0.0969	+ 9	-58		
B. A. C. 1444	5.7	0.75	11.9	28 25.0	20 2 49.8	- 1 49.6	-1.2600	0.5555	0.0747	-48	-62		
W. iv, 1421	6.0	0.95	11.4	27 54.2	14 55.2	+ 9 49.4	+0.0054	0.5620	0.0427	+44	-17		
22 Aurigæ	7.0	+1.05	+11.5	+28 50.7	20 37.1	- 8 41.4	-0.8009	0.5644	+0.0270	- 3	-61		
β Tauri	1.8	1.07	11.4	28 31.4	21 50.2	- 7 31.0	-0.4251	0.5652	0.0237	+20	-40		
B. A. C. 1772	6.3	1.19	11.3	29 9.5	21 3 13.2	- 2 20.2	-1.0130	0.5674	+0.0086	-19	-61		
136 Tauri	5.3	1.28	10.4	27 35.4	9 1.7	+ 3 15.2	+0.6557	0.5692	-0.0080	+90	+19		
49 Aurigæ	5.7	1.58	9.3	28 6.3	22 2 6.0	- 4 19.6	-0.4442	0.5722	0.0572	+19	-44		
54 Aurigæ	6.0	+1.63	+ 9.1	+28 21.4	3 51.7	- 2 37.9	-0.8125	0.5724	-0.0624	- 3	-62		
25 Geminorum	6.5	1.64	9.0	28 17.6	4 35.6	- 1 55.6	-0.7927	0.5724	0.0644	- 2	-62		
39 Geminorum	6.3	1.72	7.5	26 13.1	11 43.9	+ 4 55.9	+0.8447	0.5725	0.0850	+90	+23		
40 Geminorum	6.3	1.73	7.5	26 3.4	11 59.8	+ 5 11.6	+0.9888	0.5725	0.0857	+90	+32		
W. vi, 1656	8.2	1.77	7.6	26 59.5	13 44.8	+ 6 52.5	-0.1406	0.5724	0.0908	+36	-29		
47 Geminorum	6.0	+1.82	+ 7.2	+27 1.7	16 49.4	+ 9 50.1	-0.4714	0.5724	-0.0995	+18	-49		
49 Geminorum	7.2	1.81	6.8	25 55.4	17 25.7	+10 25.0	+0.6165	0.5722	0.1011	+90	+ 9		
A Geminorum	5.7	1.87	6.0	25 15.1	21 47.0	- 9 23.7	-0.8443	0.5715	0.1132	+90	+20		
ϵ Geminorum	6.0	2.01	5.0	26 2.0	23 6 12.1	- 1 18.0	-1.0130	0.5702	0.1356	-16	-64		
κ Geminorum	3.7	1.99	4.6	24 38.9	6 21.9	- 1 8.6	+0.3925	0.5702	0.1366	+69	- 7		
μ^1 Cancri	6.3	+2.08	+ 2.7	+22 55.9	15 23.5	+ 7 32.6	+0.8106	0.5680	-0.1601	+90	+14		
B. A. C. 2703	7.5	2.08	2.6	22 45.4	15 30.6	+ 7 39.4	+0.9709	0.5680	0.1604	+90	+24		
η Cancri	5.4	2.18	+ 0.4	20 47.7	24 2 24.6	- 5 51.0	+1.0690	0.5649	0.1870	+90	+28		
38 Cancri	7.0	2.21	- 0.4	20 8.7	5 21.3	- 3 0.8	+1.1680	0.5639	0.1937	+90	+35		
39 Cancri	7.0	2.21	0.4	20 22.5	5 31.1	- 2 51.4	+0.9028	0.5639	0.1941	+90	+16		
40 Cancri	7.3	+2.21	- 0.4	+20 20.3	5 33.2	- 2 49.4	+0.9383	0.5639	-0.1941	+90	+18		
B. A. C. 2919	7.3	2.21	0.5	20 2.2	5 37.9	- 2 44.9	+1.2240	0.5636	0.1942	+90	+40		
ϵ Cancri	7.2	2.20	0.5	19 54.7	5 40.1	- 2 42.8	+1.3420	0.5636	0.1944	+90	+60		
ϵ Cancri	7.1	2.21	0.5	20 5.3	5 46.8	- 2 36.4	+1.1420	0.5636	0.1947	+90	+32		
B. A. C. 2925	7.7	2.21	0.5	19 56.9	5 52.3	- 2 31.0	+1.2660	0.5636	0.1948	+90	+45		
B. A. C. 2931	7.5	+2.22	- 0.5	+20 14.7	6 14.7	- 2 9.5	+0.8927	0.5635	-0.1957	+90	+15		
γ Cancri	4.9	2.26	0.1	21 50.5	6 50.2	- 1 35.3	-0.8429	0.5635	0.1969	- 3	-68		
71 Cancri	8.0	2.28	2.8	17 48.3	16 24.4	+ 7 37.9	+1.2470	0.5601	0.2177	+90	+39		
78 Cancri	7.8	2.29	2.9	17 53.4	17 48.2	+ 8 58.6	+0.8572	0.5597	0.2203	+90	+10		
80 Cancri	6.8	2.32	3.0	18 28.2	19 2.3	+10 10.0	-0.0084	0.5593	0.2227	+44	-36		
83 Cancri	5.7	+2.34	- 3.5	+18 8.7	22 3.6	-10 55.3	-0.3547	0.5582	-0.2286	+25	-55		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1860.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
7 Leonis	6.3	+2.33	-5.5	+14 50.5	25 5 22.8	-3 51.9	+1.2290	0.5559	-0.2417	+90	+33
8 Leonis	5.7	2.34	5.1	16 54.1	5 51.5	-3 24.2	-0.9441	0.5556	0.2424	-8	-73
11 Leonis	6.8	2.34	5.7	14 48.9	6 18.7	-2 58.3	+1.0300	0.5554	0.2432	+90	+18
ψ Leonis	6.0	2.36	6.1	14 29.7	8 47.2	-0 34.9	+0.7398	0.5546	0.2474	+90	0
23 Leonis	6.3	2.37	6.8	13 33.0	11 58.5	+2 29.7	+0.8847	0.5538	0.2523	+90	+7
ν Leonis	5.3	+2.38	-7.3	+12 56.3	15 7.2	+5 31.7	+0.6873	0.5530	-0.2571	+90	-4
α Leonis	1.3	2.40	8.1	12 28.4	19 35.6	+9 50.6	-0.0116	0.5517	0.2634	+43	-40
44 Leonis	6.0	2.41	9.7	9 18.6	26 3 3.2	-6 57.5	+1.1200	0.5500	0.2726	+90	+20
45 Leonis	6.0	2.43	9.6	10 17.3	4 6.4	-5 56.5	-0.1350	0.5495	0.2735	+37	-49
ρ Leonis	4.0	2.44	10.0	9 50.3	6 24.0	-3 43.6	-0.3208	0.5494	0.2761	+27	-59
49 Leonis	6.0	+2.43	-10.3	+9 11.1	7 23.7	-2 46.1	+0.0477	0.5493	-0.2770	+47	-40
37 Sextantis	6.3	2.42	11.5	6 55.1	12 19.4	+1 59.3	+0.9042	0.5486	0.2816	+90	+5
38 Sextantis	7.8	2.43	11.5	6 53.5	12 52.2	+2 31.0	+0.7761	0.5483	0.2820	+90	-3
56 Leonis	6.6	2.45	12.0	6 44.2	16 45.0	+6 15.8	-0.1720	0.5479	0.2851	+37	-52
ϵ Leonis	5.3	2.45	12.3	6 39.4	18 51.6	+8 17.9	-0.6958	0.5476	0.2865	+8	-83
75 Leonis	5.7	+2.43	-13.6	+2 34.7	27 2 15.7	-8 33.3	+1.1680	0.5473	-0.2906	+90	+21
79 Leonis	6.0	2.43	14.0	1 58.5	5 17.1	-5 38.2	+0.8798	0.5473	0.2917	+90	+2
82 Leonis	6.9	2.45	13.9	3 52.2	6 0.3	-4 56.5	-1.1870	0.5473	0.2920	-22	-86
83 Leonis	6.5	2.45	13.9	3 34.6	6 5.1	-4 51.9	-0.9239	0.5473	0.2920	-4	-86
τ Leonis	5.1	2.45	14.0	+3 25.5	7 1.3	-3 57.6	-1.0470	0.5471	0.2921	-12	-87
B. A. C. 4134	6.3	+2.47	-16.5	-3 22.9	28 5 23.2	-6 22.3	-0.9456	0.5503	-0.2910	-6	-90
χ Virginis	5.2	2.42	17.1	7 25.7	14 39.7	+2 34.6	+0.3273	0.5530	0.2860	+59	-27
28 Virginis	7.0	2.42	17.2	6 56.0	15 50.8	+3 43.2	-0.4934	0.5533	0.2849	+18	-73
ψ Virginis	5.2	2.41	17.4	8 58.8	21 14.5	+8 55.5	-0.0196	0.5550	0.2806	+41	-45
ζ Virginis	5.9	2.41	17.6	10 11.4	29 3 5.6	-9 25.9	-0.4616	0.5572	0.2748	+18	-71
50 Virginis	6.3	+2.41	-17.6	-9 46.8	3 53.8	-8 39.5	-1.0830	0.5575	-0.2737	-18	-90
62 Virginis	7.0	2.40	17.7	10 45.8	8 26.0	-4 17.1	-1.3490	0.5595	0.2683	+44	-90
ι Virginis	5.7	2.40	17.6	12 10.3	11 8.8	-1 40.2	-0.6944	0.5603	0.2647	+5	-90
75 Virginis	6.0	2.39	17.5	14 50.0	13 44.1	+0 49.5	+1.2370	0.5615	0.2610	+75	+29
83 Virginis	6.0	2.39	17.3	15 39.7	18 37.9	+5 32.5	+0.7927	0.5636	0.2535	+74	-2
85 Virginis	6.5	+2.39	-17.3	-15 15.0	19 5.7	+5 59.2	+0.2704	0.5639	-0.2527	+52	-30
B. A. C. 4722	5.8	2.38	16.9	17 43.2	30 7 27.8	-6 6.4	-0.2014	0.5699	0.2306	+21	-16
B. A. C. 4923	7.3	2.36	15.7	20 57.0	31 0 24.1	+10 11.1	-0.6891	0.5779	0.1931	-4	-90
B. A. C. 5197	6.0	2.33	13.6	24 23.6	19 29.0	+4 30.9	-0.4599	0.5839	0.1423	-4	-74
δ Scorpil	5.3	2.33	13.2	25 26.3	21 28.4	+6 25.5	+0.3161	0.5848	0.1367	+42	-27
Δ^s Scorpil	5.2	+2.32	-13.2	-25 1.2	22 30.5	+7 25.1	-0.2474	0.5849	-0.1336	+14	-58
B. A. C. 5253	5.8	2.31	13.4	24 13.6	22 37.9	+7 32.2	-1.0650	0.5849	0.1332	-34	-90
B. A. C. 5255	6.0	2.32	13.2	25 6.3	22 44.3	+7 38.3	-0.1918	0.5849	0.1329	+16	-55
3 Scorpil	6.7	2.31	13.2	24 56.3	22 55.0	+7 48.7	-0.3836	0.5849	0.1324	+6	-68
4 Scorpil	6.3	+2.32	-12.9	-25 57.8	23 13.7	+8 6.6	+0.6092	0.5849	-0.1316	+59	-10

APRIL.

B. A. C. 5314	5.7	+2.30	-12.8	-25 34.7	1 2 17.0	+11 2.5	-0.1669	0.5854	-0.1226	+16	-54
B. A. C. 5347	6.0	2.29	12.5	26 3.0	4 7.4	-11 11.5	+0.0912	0.5860	0.1171	+29	-39
σ Scorpil	3.4	+2.25	-12.2	-25 20.8	9 11.9	-6 19.3	-1.1810	0.5865	-0.1025	-46	-90
α Scorpil	1.2	2.24	11.7	26 12.3	12 21.8	-3 17.0	-0.6163	0.5865	0.0922	-10	-90
τ Scorpil	3.2	2.25	10.9	28 0.2	14 50.0	-0 54.8	+0.9905	0.5868	0.0847	+62	+16
B. A. C. 5800	7.5	2.10	9.6	26 51.8	2 5 42.8	-10 37.9	-1.0920	0.5856	0.0387	+44	-90
43 Ophiuchi	5.8	2.08	9.2	28 2.6	9 14.6	-7 14.5	+0.0086	0.5837	-0.0277	-17	-43
3 Sagittarii	4.6	+2.00	-7.8	-27 47.6	18 44.7	+1 53.0	-0.3780	0.5803	+0.0014	-5	-68
B. A. C. 6127	5.1	1.93	6.7	28 28.2	8 2 53.2	+9 42.3	+0.4376	0.5765	0.0256	+39	-19
B. A. C. 6194	5.1	1.87	6.6	27 4.7	6 55.5	-10 24.8	-0.8900	0.5741	0.0374	-30	-90
ϕ Sagittarii	3.7	1.75	5.3	27 6.0	18 12.2	+0 26.1	-0.2748	0.5669	0.0689	+6	-61
σ Sagittarii	2.3	1.70	5.1	26 25.6	22 13.3	+4 18.2	-0.6904	0.5641	0.0796	-14	-90
τ Sagittarii	3.6	+1.67	-4.1	-27 49.4	4 3 7.0	+9 1.1	+1.2150	0.5603	+0.0923	+62	+39
ψ Sagittarii	5.4	+1.61	-4.5	-25 26.2	6 49.7	-11 24.4	-0.9658	0.5575	+0.1015	-29	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
λ^1 Sagittarii	5.7	+1.50	- 3.7	-24 56.9	4 15 44.3	- 2 48.8	-0.4907	0.5499	+0.1226	+ 1	-77
λ^2 Sagittarii	4.7	1.49	3.7	25 6.9	16 1.8	- 2 32.0	-0.2749	0.5499	0.1233	+12	-61
4 Capricorni	6.1	1.25	2.8	22 7.9	5 10 50.2	- 8 21.9	-0.7968	0.5340	0.1622	-11	-90
B. A. C. 7049	6.5	1.21	2.1	22 44.2	16 14.9	- 3 7.8	+0.7626	0.5297	0.1720	+64	- 2
17 Capricorni	6.0	1.08	1.6	21 53.5	6 0 16.7	+ 4 38.5	+1.2820	0.5240	0.1854	+68	+41
20 Capricorni	6.3	+1.02	- 2.0	-19 26.3	6 56.2	+11 5.5	-0.1200	0.5180	+0.1955	+28	-51
η Capricorni	5.1	1.01	1.5	20 15.0	9 19.3	-10 35.8	+1.2380	0.5162	0.1990	+70	+33
30 Capricorni	5.5	0.92	1.5	18 25.3	16 12.2	- 3 55.3	+0.6407	0.5117	0.2081	+70	-10
31 Capricorni	6.7	0.92	1.6	17 53.9	16 21.8	- 3 46.0	+0.1022	0.5110	0.2083	+41	-38
ϵ Capricorni	4.4	0.89	1.6	17 16.6	18 25.1	- 1 46.5	-0.1479	0.5099	0.2108	+29	-52
42 Capricorni	5.6	+0.78	- 1.7	-14 30.7	7 4 31.1	+ 8 1.8	-0.9970	0.5035	+0.2225	-15	-90
44 Capricorni	6.1	0.77	1.6	14 52.5	5 18.7	+ 8 48.1	-0.4199	0.5030	0.2233	+17	-69
45 Capricorni	6.3	0.77	1.4	15 13.6	5 48.3	+ 9 16.9	+0.0770	0.5025	0.2240	+42	-40
μ Capricorni	5.2	0.72	1.4	14 2.5	10 44.4	- 9 55.5	-0.1120	0.4998	0.2288	+33	-50
MARS				13 40.6	17 11.4	- 3 39.5	+0.9840	0.4634	0.2230	+76	+ 9
ϵ^1 Aquarii	6.8	+0.62	- 1.4	-11 19.9	20 6.5	- 0 49.3	-0.9166	0.4949	+0.2369	- 7	-90
ϵ^2 Aquarii	5.6	0.63	1.1	12 4.6	20 9.2	- 0 46.7	-0.0847	0.4949	0.2369	+36	-48
B. A. C. 7740	7.0	0.62	1.2	11 34.7	21 4.2	+ 0 6.9	-0.4189	0.4946	0.2377	+19	-69
40 Aquarii	7.0	0.62	0.9	12 26.4	21 41.0	+ 0 42.6	+0.6813	0.4944	0.2435	+78	- 9
67 Aquarii	6.4	0.45	1.0	7 30.4	8 14 17.7	- 7 8.0	-0.7297	0.4878	0.2488	+ 5	-90
B. A. C. 7986	5.9	+0.39	- 0.9	- 5 32.5	21 3.7	- 0 32.8	-1.2140	0.4860	+0.2520	-26	-90
B. A. C. 7993	6.6	0.38	0.9	5 22.0	22 15.6	+ 0 37.2	-1.1060	0.4860	0.2524	-18	-90
B. A. C. 8017	6.1	0.37	0.7	5 16.3	9 0 40.0	+ 2 57.8	-0.6032	0.4854	0.2534	+13	-82
B. A. C. 8094	5.4	0.31	0.3	4 3.7	8 42.2	+10 47.2	+0.1000	0.4838	0.2560	+49	-39
11 Piscium	6.4	0.25	0.1	2 21.8	16 40.6	- 5 27.0	+0.2593	0.4829	0.2573	+58	-31
12 Piscium	6.8	+0.24	- 0.2	- 1 36.5	16 42.7	- 5 25.0	-0.5706	0.4829	+0.2573	+15	-79
13 Piscium	6.4	0.24	- 0.1	1 39.6	18 7.3	- 4 2.5	-0.1519	0.4829	0.2575	+36	-52
14 Piscium	5.9	0.24	0.0	- 1 49.3	19 22.5	- 2 49.3	+0.3521	0.4829	0.2577	+64	-26
21 Piscium	5.8	0.17	+ 0.3	+ 0 29.9	10 4 11.9	+ 5 46.2	+0.0482	0.4829	0.2580	+47	-41
25 Piscium	6.4	+0.15	0.3	1 30.7	6 17.0	+ 7 47.9	-0.5431	0.4828	0.2578	+16	-77
NEW MOON.											
μ Arietis	6.0	-0.03	+ 6.4	+19 34.2	14 1 57.9	+ 0 55.2	+0.8802	0.5214	+0.1868	+90	+13
B. A. C. 920	7.0	0.00	7.0	21 12.3	10 0.0	+ 8 42.2	+0.5326	0.5266	0.1737	+79	- 5
ϵ Arietis	4.6	0.00	7.0	20 55.6	10 10.0	+ 8 51.9	+0.8674	0.5266	0.1733	+90	+14
64 Arietis	5.7	+0.05	8.1	24 21.4	22 1.7	- 3 39.4	-0.9632	0.5346	0.1514	-12	-66
7 Tauri	6.0	+0.09	+ 8.3	+24 7.0	15 2 44.8	+ 0 54.4	-0.0073	0.5386	+0.1421	+44	-28
11 Tauri	6.7	0.12	8.7	24 59.7	5 38.6	+ 3 42.3	-0.5641	0.5406	0.1359	+13	-58
g Pleiadum	6.3	0.14	8.6	23 57.8	7 30.5	+ 5 30.5	+0.8112	0.5424	0.1320	+90	+16
17 Tauri	4.3	0.14	8.5	23 47.3	7 32.6	+ 5 32.5	+0.0110	0.5424	0.1318	+90	+29
18 Tauri	6.3	0.14	8.7	24 31.0	7 39.7	+ 5 39.4	+0.2274	0.5416	0.1317	+57	-15
19 Tauri	5.0	+0.14	+ 8.6	+24 8.6	7 41.3	+ 5 41.0	+0.6384	0.5416	+0.1315	+90	+ 6
20 Tauri	5.0	0.14	8.6	24 2.5	7 58.3	+ 5 57.4	+0.7856	0.5418	0.1311	+90	+14
21 Tauri	7.0	0.14	8.6	24 14.0	8 0.5	+ 5 59.5	+0.5820	0.5418	0.1311	+85	+ 3
22 Tauri	7.0	0.15	8.6	24 12.4	8 4.3	+ 6 3.1	+0.6201	0.5418	0.1310	+90	+ 5
23 Tauri	4.7	0.15	8.6	23 37.6	8 12.5	+ 6 11.0	+1.2720	0.5419	0.1306	+90	+53
24 Tauri	8.0	+0.15	+ 8.6	+23 47.8	8 40.4	+ 6 38.0	+1.1460	0.5423	+0.1296	+90	+39
η Tauri	3.1	0.16	8.6	23 47.2	8 44.0	+ 6 41.5	+1.1650	0.5423	0.1294	+90	+41
B. A. C. 1171	7.8	0.16	8.6	24 1.7	9 11.5	+ 7 8.1	+0.9601	0.5425	0.1280	+90	+26
B. A. C. 1192	6.0	0.16	8.9	25 16.1	9 59.4	+ 7 54.3	-0.2890	0.5433	0.1267	+28	-41
ρ Tauri	6.0	0.24	9.4	26 12.8	19 11.4	- 7 12.5	-0.2482	0.5488	0.1060	+30	-37
ϕ Tauri	5.3	+0.29	+ 9.7	+27 6.3	23 23.0	- 3 9.8	-0.7907	0.5513	+0.0961	- 2	-63
χ Tauri	5.7	0.30	9.4	25 23.2	16 0 23.7	- 2 11.2	+1.1700	0.5521	0.0937	+90	+46
W. iv, 1421	6.0	0.57	10.2	27 54.2	20 39.9	- 6 38.6	-0.1742	0.5614	0.0418	+34	-27
22 Aurigæ	7.0	0.65	10.4	28 50.7	17 2 24.8	- 1 6.3	-0.9904	0.5633	0.0263	-17	-61
β Tauri	1.8	0.67	10.3	28 31.4	3 38.6	+ 0 4.8	-0.6139	0.5637	0.0229	+ 9	-53
B. A. C. 1772	6.3	+0.76	+10.3	+29 9.5	9 5.2	+ 5 19.3	-1.2090	0.5653	+0.0079	-40	-61
136 Tauri	5.3	+0.84	+ 9.7	+27 35.4	14 58.1	+10 50.1	+0.1684	0.5661	-0.0085	+76	+ 0

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1860.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	°	d h m	h m				°	°
49 Aurigæ	5.7	+1.11	+ 9.0	+28 6.3	18 8 19.7	+ 3 41.6	-0.6501	0.5676	-0.0572	+ 7	-57
54 Aurigæ	6.0	1.15	9.0	28 21.4	10 7.6	+ 5 25.5	-1.0220	0.5676	0.0620	-19	-62
25 Geminorum	6.5	1.16	8.9	28 17.6	10 52.3	+ 6 8.5	-1.0020	0.5676	0.0642	-17	-62
39 Geminorum	6.3	1.25	7.7	26 13.1	18 9.7	-10 50.5	+0.6504	0.5667	0.0844	+90	+12
40 Geminorum	6.3	1.26	7.6	26 3.4	18 26.3	-10 34.5	+0.7940	0.5667	0.0851	+90	+20
W. vi, 1656	8.2	+1.29	+ 7.8	+26 59.5	20 13.8	- 8 51.1	-0.3477	0.5666	-0.0899	+24	-41
47 Geminorum	6.0	1.34	7.5	27 1.7	23 22.8	- 5 49.1	-0.6819	0.5661	0.0985	+ 5	-61
9 Geminorum	7.2	1.34	7.1	25 55.4	19 0 0.0	- 5 13.2	+0.4188	0.5659	0.1001	+71	- 2
A Geminorum	5.7	1.40	6.4	25 15.1	4 28.0	- 0 55.2	+0.6504	0.5649	0.1120	+90	+ 9
c Geminorum	6.0	1.55	5.8	26 2.0	13 7.1	+ 7 24.7	-1.2340	0.5627	0.1344	-39	-64
κ Geminorum	3.7	+1.53	+ 5.3	+24 38.9	13 17.2	+ 7 34.4	+0.1897	0.5626	-0.1347	+56	-17
μ ¹ Cancri	6.3	1.64	3.7	22 56.0	22 35.0	- 7 28.2	+0.6130	0.5599	0.1575	+87	+ 2
B. A. C. 2703	7.5	1.64	3.6	22 45.5	22 42.4	- 7 21.1	+0.7756	0.5598	0.1579	+90	+11
η Cancri	5.4	1.77	1.6	20 47.7	20 9 57.6	+ 3 29.6	+0.8824	0.5556	0.1835	+90	+15
B. A. C. 2907	8.8	1.79	0.9	19 57.4	12 45.9	+ 6 11.9	+1.2210	0.5547	0.1894	+90	+40
38 Cancri	7.0	+1.80	+ 0.9	+20 8.7	13 0.2	+ 6 25.7	+0.9806	0.5547	-0.1901	+90	+21
39 Cancri	7.0	1.80	1.0	20 22.5	13 10.4	+ 6 35.6	+0.7127	0.5547	0.1904	+90	+ 5
40 Cancri	7.3	1.80	0.9	20 20.3	13 12.6	+ 6 37.7	+0.7435	0.5547	0.1904	+90	+ 6
B. A. C. 2919	7.3	1.80	0.8	20 2.2	13 17.5	+ 6 42.4	+1.0370	0.5546	0.1905	+90	+24
e Cancri	7.2	1.80	0.8	19 54.7	13 19.7	+ 6 44.5	+1.1590	0.5546	0.1907	+90	+34
c Cancri	7.1	+1.80	+ 0.8	+20 5.3	13 26.6	+ 6 51.1	+0.9563	0.5544	-0.1909	+90	+19
B. A. C. 2925	7.7	1.80	0.8	19 56.9	13 32.4	+ 6 56.7	+1.0810	0.5544	0.1913	+90	+28
B. A. C. 2931	7.5	1.81	0.8	20 14.7	13 55.5	+ 7 19.0	+0.7020	0.5542	0.1919	+90	+ 4
γ Cancri	4.9	1.85	+ 1.3	21 50.5	14 32.2	+ 7 54.4	-1.0600	0.5540	0.1932	-18	-68
71 Cancri	8.0	1.90	- 1.4	17 48.3	21 0 26.4	- 6 32.3	+1.0720	0.5503	0.2129	+90	+24
78 Cancri	7.8	+1.92	- 1.5	+17 53.4	1 53.2	- 5 8.6	+0.6728	0.5494	-0.2155	+90	+ 0
80 Cancri	6.8	1.95	1.5	18 28.2	3 10.0	- 3 54.5	-0.1976	0.5493	0.2181	+33	-46
83 Cancri	5.7	1.98	2.0	18 8.8	6 17.8	- 0 53.3	+0.5577	0.5483	0.2237	+14	-66
7 Leonis	6.3	2.00	4.2	14 50.5	13 52.7	+ 6 25.9	+1.0630	0.5462	0.2365	+90	+20
8 Leonis	5.7	2.04	3.6	16 54.1	14 22.4	+ 6 54.6	-1.1480	0.5458	0.2372	-23	-73
11 Leonis	6.8	+2.01	- 4.3	+14 48.9	14 50.6	+ 7 21.7	+0.8594	0.5456	-0.2380	+90	+ 6
ψ Leonis	6.0	2.03	4.8	14 29.7	17 24.4	+ 9 50.3	+0.5662	0.5448	0.2418	+80	-10
23 Leonis	6.3	2.05	5.5	13 33.0	20 42.6	-10 58.3	+0.7169	0.5441	0.2468	+90	- 2
ν Leonis	5.3	2.08	6.1	12 56.3	23 58.4	- 7 49.2	+0.5220	0.5429	0.2513	+76	-12
α Leonis	1.3	2.11	6.8	12 28.4	22 4 36.0	- 3 21.0	-0.1865	0.5420	0.2574	+34	-50
44 Leonis	6.0	+2.16	- 8.7	+ 9 18.7	12 19.2	+ 4 6.4	+0.9707	0.5406	-0.2663	+90	+11
45 Leonis	6.0	2.18	8.5	10 17.4	13 24.5	+ 5 9.5	-0.3011	0.5405	0.2675	+28	-58
ρ Leonis	4.0	2.19	8.9	9 50.3	15 46.8	+ 7 27.1	-0.4861	0.5401	0.2699	+19	-69
49 Leonis	6.0	2.19	9.2	9 11.1	16 48.5	+ 8 26.7	-0.1085	0.5399	0.2708	+38	-47
37 Sextantis	6.3	2.23	10.6	6 55.1	21 53.9	-10 38.2	+0.7683	0.5398	0.2754	+90	- 3
38 Sextantis	7.8	+2.24	-10.7	+ 6 53.5	22 28.1	-10 5.1	+0.6380	0.5395	-0.2758	+85	-10
56 Leonis	6.6	2.28	11.2	6 44.2	22 27.9	- 6 13.4	-0.3159	0.5393	0.2788	+28	-60
c Leonis	5.3	2.30	11.4	6 39.4	4 38.4	- 4 7.3	-0.8416	0.5380	0.2797	0	-83
75 Leonis	5.7	2.31	13.3	2 34.7	12 15.7	+ 3 14.7	+1.0590	0.5396	0.2845	+90	+14
76 Leonis	6.3	2.32	13.5	2 13.0	13 0.8	+ 3 58.2	+1.2050	0.5396	0.2849	+90	+25
79 Leonis	6.0	+2.34	-13.7	+ 1 58.5	15 22.0	+ 6 14.7	+0.7725	0.5399	-0.2859	+90	- 4
82 Leonis	6.9	2.36	13.3	3 52.2	16 6.4	+ 6 57.6	-1.3190	0.5400	0.2861	-35	-86
83 Leonis	6.5	2.36	13.4	3 34.6	16 11.3	+ 7 2.4	-1.0520	0.5400	0.2861	-13	-86
r Leonis	5.1	2.37	13.5	+ 3 25.5	17 9.0	+ 7 58.1	-1.1770	0.5401	0.2864	-22	-87
B. A. C. 4134	6.3	2.46	17.0	- 3 22.9	24 16 1.1	+ 6 3.8	-1.0200	0.5456	0.2863	-11	-90
χ Virginis	5.2	+2.49	-18.1	- 7 25.7	25 1 26.2	- 8 50.7	+0.2870	0.5495	-0.2818	+58	-29
28 Virginis	7.0	2.50	18.1	6 56.0	2 38.3	- 7 41.1	-0.5378	0.5499	0.2809	+15	-77
ψ Virginis	5.2	2.52	18.6	8 58.8	8 5.7	- 2 25.1	-0.0475	0.5526	0.2770	+39	-46
g Virginis	5.9	2.56	18.9	10 11.4	13 59.8	+ 3 16.5	-0.4767	0.5555	0.2715	+17	-72
50 Virginis	6.3	2.56	18.9	9 46.8	14 48.5	+ 4 3.4	-1.1030	0.5560	0.2707	-20	-90
i Virginis	5.7	+2.60	-19.2	-12 10.3	22 5.7	+11 4.9	-0.6916	0.5601	-0.2628	+ 4	-90
75 Virginis	6.0	+2.61	-19.4	-14 50.0	26 0 41.4	-10 25.0	+1.2500	0.5615	-0.2586	+75	+31

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
83 Virginis	6.0	+2.66	-19.4	-15 39.7	26 5 35.5	- 5 41.7	+0.8149	0.5645	-0.2517	+74	0
85 Virginis	6.5	2.66	19.4	15 15.0	6 3.2	- 5 15.0	+0.2935	0.5648	0.2508	+54	-18
B. A. C. 4722	5.8	2.73	19.2	17 43.2	18 22.5	+ 6 36.6	-0.2367	0.5727	0.2291	+24	-59
B. A. C. 4923	7.3	2.83	18.4	20 57.0	27 11 9.2	- 1 15.7	-0.5995	0.5826	0.1925	+ 1	-85
42 Libræ	5.7	2.91	16.2	23 29.1	28 3 48.5	- 9 16.3	-0.9313	0.5909	0.1482	-23	-90
B. A. C. 5197	6.0	+2.92	-15.8	-24 23.7	5 55.0	- 7 14.9	-0.3313	0.5917	-0.1422	+ 9	-64
Scorpii	5.3	2.94	15.5	25 26.4	7 52.1	- 5 22.6	+0.4433	0.5923	0.1365	+50	-19
A ^s Scorpii	5.2	2.93	15.4	25 1.3	8 52.8	- 4 24.4	-0.1117	0.5924	0.1336	+20	-50
B. A. C. 5253	5.8	2.92	15.5	24 13.7	9 0.0	- 4 17.5	-0.9221	0.5928	0.1332	-24	-90
B. A. C. 5255	6.0	2.93	15.3	25 6.4	9 6.3	- 4 11.5	-0.0567	0.5928	0.1329	+23	-47
3 Scorpii	6.7	+2.93	-15.4	-24 56.4	9 16.8	- 4 1.4	-0.2468	0.5928	-0.1324	+15	-59
4 Scorpii	6.3	2.95	15.2	25 57.9	9 35.1	- 3 43.8	+0.7372	0.5928	0.1314	+63	- 2
B. A. C. 5314	5.7	2.94	14.8	25 34.7	12 34.5	- 0 51.8	-0.0284	0.5936	0.1225	+23	-45
B. A. C. 5347	6.0	2.96	14.4	26 3.0	14 22.4	+ 0 51.7	+0.2291	0.5941	0.1170	+36	-31
Scorpii	3.4	2.93	14.0	25 20.8	19 20.0	+ 5 37.0	-1.0230	0.5943	0.1017	-34	-90
a Scorpii	1.2	+2.94	-13.4	-26 12.3	22 25.3	+ 8 34.7	-0.4585	0.5957	-0.0920	- 2	-74
r Scorpii	3.2	2.97	12.7	28 0.2	29 0 49.9	+10 53.2	+1.1440	0.5958	0.0845	+62	+30
B. A. C. 5800	6.5	2.91	10.5	26 51.8	15 19.7	+ 0 47.0	-0.8995	0.5946	0.0380	-31	-90
43 Ophiuchi	5.8	2.92	9.7	28 2.7	18 45.8	+ 4 4.7	+0.1939	0.5936	-0.0269	+27	-33
3 Sagittarii	4-6	2.87	8.0	27 47.6	30 4 0.2	-11 3.6	-0.1780	0.5903	+0.0026	+ 5	-55
B. A. C. 6127	5.1	+2.83	- 6.5	-28 28.2	11 55.2	- 3 27.8	+0.6383	0.5860	+0.0270	+55	- 7
B. A. C. 6194	5.1	+2.77	- 6.2	-27 4.9	15 50.7	+ 0 18.3	-0.6674	0.5837	+0.0390	-18	-90

MAY.

φ Sagittarii	3.7	+2.68	- 4.2	-27 6.0	1 2 48.9	+10 50.7	-0.0486	0.5758	+0.0709	+18	-47
σ Sagittarii	2.3	2.63	3.7	26 25.5	6 43.5	- 9 23.7	-0.4565	0.5728	0.0816	- 2	-74
ψ Sagittarii	5.4	2.53	2.6	25 26.1	15 6.4	- 1 19.8	-0.7201	0.5656	0.1035	-14	-90
A ^s Sagittarii	5-7	2.43	1.4	24 56.8	23 47.8	+ 7 2.5	-0.2450	0.5580	0.1247	+13	-58
A ^s Sagittarii	4.7	+2.43	- 1.3	-25 6.8	2 0 4.9	+ 7 18.9	-0.0317	0.5577	+0.1253	+24	-46
4 Capricorni	6.1	2.15	+ 0.4	22 7.9	18 28.0	+ 1 3.5	-0.5330	0.5403	0.1640	+ 3	-79
B. A. C. 7049	6.5	2.11	1.4	22 44.2	23 46.2	+ 6 11.1	+1.0100	0.5355	0.1736	+67	+15
20 Capricorni	6.3	1.88	2.0	19 26.3	3 14 12.1	- 3 50.9	+0.1423	0.5225	0.1968	+42	-36
θ Capricorni	4.1	1.82	1.7	17 38.8	17 20.8	- 0 48.1	-1.1710	0.5195	0.2012	-32	-90
30 Capricorni	5.5	+1.77	+ 2.8	-18 25.3	23 20.0	+ 5 0.1	+0.8960	0.5147	+0.2090	+72	+ 5
31 Capricorni	6.7	1.76	2.6	17 53.9	23 29.6	+ 5 9.5	+0.3620	0.5146	0.2092	+46	-25
ι Capricorni	4.4	1.71	2.6	17 16.6	4 1 31.0	+ 7 7.0	+0.1123	0.5133	0.2117	+42	-38
42 Capricorni	5.6	1.58	2.7	14 30.7	11 29.7	- 7 12.0	-0.7297	0.5056	0.2229	0	-90
44 Capricorni	6.1	1.57	2.8	14 52.5	12 16.8	- 6 26.3	-0.1584	0.5053	0.2238	+30	-53
45 Capricorni	6.3	+1.57	+ 3.0	-15 13.6	12 46.7	- 5 57.2	+0.3386	0.5051	+0.2243	+56	-26
μ Capricorni	5.2	1.51	3.1	14 2.4	17 39.2	- 1 13.2	+0.1459	0.5019	0.2289	+47	-36
α Aquarii	6.8	1.38	3.3	11 19.8	5 25.6	+ 7 48.4	-0.6643	0.4963	0.2366	+ 6	-89
α Aquarii	5.6	1.39	3.3	12 4.5	2 59.3	+ 7 51.0	+0.1647	0.4963	0.2366	+49	-35
B. A. C. 7740	7.0	1.37	3.3	11 34.6	3 53.8	+ 8 44.0	-0.1702	0.4957	0.2372	+32	-53
40 Aquarii	7.0	+1.38	+ 3.6	-12 26.3	4 30.6	+ 9 19.7	+0.9245	0.4943	+0.2379	+78	+ 6
67 Aquarii	6.4	1.15	3.3	7 30.3	21 1.2	+ 1 23.2	-0.4929	0.4883	0.2477	+17	-73
B. A. C. 7986	5.9	1.07	3.3	5 22.4	6 3 45.5	+ 7 56.5	-0.9833	0.4860	0.2504	-10	-90
B. A. C. 7993	6.6	1.06	3.3	5 21.9	4 57.2	+ 9 6.3	-0.8790	0.4859	0.2505	- 3	-90
B. A. C. 8017	6.1	1.04	3.5	5 16.2	7 21.3	+19 26.6	-0.3796	0.4851	0.2520	+24	-65
B. A. C. 8094	5.4	+0.96	+ 3.8	- 4 3.6	15 22.1	- 4 45.4	+0.3101	0.4834	+0.2542	+60	-28
11 Piscium	6.4	0.88	3.9	2 21.7	23 19.5	+ 2 59.4	+0.4563	0.4826	0.2554	+70	-20
12 Piscium	6.8	0.87	3.7	1 36.4	23 21.6	+ 3 1.4	-0.3714	0.4826	0.2556	+25	-65
13 Piscium	6.4	0.86	3.8	1 39.5	7 0 46.0	+ 4 23.6	+0.0462	0.4826	0.2556	+46	-42
14 Piscium	5.9	0.85	3.9	- 1 49.2	2 1.0	+ 5 36.6	+0.5434	0.4825	0.2558	+76	-16
21 Piscium	5.8	+0.76	+ 3.8	+ 0 30.0	10 49.8	- 9 48.4	+0.2256	0.4823	+0.2561	+56	-32

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S					AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N.	S.	
		$\Delta\alpha$	$\Delta\delta$									
		α	δ	α	d h m	h m				α	δ	
25 Piscium	6.4	+0.74	+3.7	+ 1 30.8	7 12 54.7	- 7 46.9	-0.3662	0.4823	+0.2558	+25	-64	
51 Piscium	5.8	0.55	4.0	6 23.0	8 11 22.0	- 9 53.0	-0.0703	0.4864	0.2508	+40	-46	
101 Piscium	6.3	0.30	4.9	14 7.9	9 22 15.4	+ 0 0.9	-0.2450	0.5016	0.2280	+31	-52	
104 Piscium	7.5	0.30	5.0	13 45.6	10 0 6.6	+ 1 48.9	+0.5855	0.5024	0.2262	+81	- 9	
4 Arietis	5.7	0.26	5.0	16 26.4	4 48.0	+ 6 22.3	-1.3240	0.5053	0.2215	+42	-74	
B. A. C. 549	8.2	+0.26	+5.0	+16 30.2	4 53.5	+ 6 27.6	-1.3740	0.5056	+0.2215	-52	-73	
1 Arietis	5.7	0.24	5.1	17 18.7	9 34.8	+11 0.7	-1.2370	0.5082	0.2163	-32	-73	
23 Arietis	7.5	0.21	5.6	19 12.8	20 43.0	- 2 11.0	-0.9956	0.5159	0.2024	-12	-71	
NEW MOON.												
W. iv, 1421	6.0	+0.46	+8.8	+27 54.1	14 2 19.6	+ 0 48.5	-0.3312	0.5654	+0.0403	+25	-37	
22 Aurigæ	7.0	0.51	8.9	28 50.6	8 1.8	+ 6 18.0	-1.1540	0.5671	0.0246	-33	-61	
β Tauri	1.8	0.52	8.9	28 31.3	9 15.1	+ 7 28.6	-0.7805	0.5675	+0.0212	- 2	-61	
136 Tauri	5.3	0.64	8.6	27 35.3	20 30.1	- 5 41.7	+0.2827	0.5696	-0.0101	+61	- 1	
49 Aurigæ	5.7	0.84	8.1	28 6.3	15 13 47.9	+10 57.3	-0.8624	0.5701	0.0588	- 7	-62	
54 Aurigæ	6.0	+0.87	+8.1	+28 21.4	15 35.7	-11 19.0	-1.2380	0.5697	-0.0638	-44	-62	
25 Geminorum	6.5	0.88	8.1	28 17.6	16 20.3	-10 36.1	-1.2200	0.5696	0.0659	-41	-62	
39 Geminorum	6.3	0.96	7.2	26 13.1	23 37.7	- 3 35.1	+0.4226	0.5682	0.0857	+73	0	
40 Geminorum	6.3	0.96	7.2	26 3.4	23 54.3	- 3 19.1	+0.5703	0.5682	0.0864	+86	+ 7	
W. vi, 1656	8.2	0.99	7.2	26 59.5	16 1 41.9	- 1 35.6	-0.5751	0.5679	0.0913	+11	-55	
47 Geminorum	6.0	+1.03	+7.1	+27 1.7	4 51.4	+ 1 26.9	-0.9154	0.5670	-0.1000	-11	-63	
49 Geminorum	7.2	1.03	6.7	25 55.4	5 28.7	+ 2 2.8	+0.1862	0.5669	0.1014	+55	-14	
B. A. C. 2363	7.3	1.03	6.4	24 53.5	6 10.5	+ 2 43.0	+1.2020	0.5667	0.1032	+90	+49	
52 Geminorum	6.3	1.03	6.5	25 4.0	6 16.6	+ 2 48.9	+1.0080	0.5667	0.1036	+90	+32	
A Geminorum	5.7	1.08	6.2	25 15.1	9 57.5	+ 6 21.6	+0.4120	0.5654	0.1131	+70	- 3	
κ Geminorum	3.7	+1.19	+5.4	+24 38.9	18 49.5	- 9 6.0	-0.0577	0.5622	-0.1356	+40	-30	
82 Geminorum	6.3	1.20	4.8	23 24.0	20 35.7	- 7 23.6	+1.0060	0.5615	0.1398	+90	+28	
7 Cancri	6.3	1.27	3.9	22 21.8	17 3 9.2	- 1 4.4	+1.1190	0.5586	0.1555	+90	+35	
μ^1 Cancri	6.3	1.29	4.0	22 56.0	4 12.1	- 0 3.7	+0.3585	0.5584	0.1579	+66	- 1	
B. A. C. 2703	7.5	1.29	4.0	22 45.5	4 19.6	+ 0 3.5	+0.5222	0.5581	0.1582	+78	- 2	
B. A. C. 2788	6.0	+1.34	+2.9	+21 4.6	10 18.3	+ 5 49.3	+1.2860	0.5555	-0.1715	+90	+51	
η Cancri	5.4	1.40	2.3	20 47.7	15 42.7	+11 2.2	+0.6200	0.5527	0.1831	+87	0	
35 Cancri	6.3	1.40	2.0	19 56.8	16 52.3	-11 50.6	+1.2880	0.5524	0.1854	+90	+49	
B. A. C. 2907	8.8	1.43	1.7	19 57.4	18 33.5	-10 13.1	+0.9601	0.5513	0.1889	+90	+19	
38 Cancri	7.0	1.44	1.8	20 8.7	18 48.0	- 9 59.0	+0.7196	0.5513	0.1892	+90	+ 5	
39 Cancri	7.0	+1.44	+1.8	+20 22.5	18 58.3	- 9 49.1	+0.4481	0.5513	-0.1898	+71	-10	
40 Cancri	7.3	1.44	1.8	20 20.3	19 0.6	- 9 46.9	+0.4792	0.5513	0.1898	+73	- 8	
B. A. C. 2919	7.3	1.44	1.7	20 2.2	19 5.5	- 9 42.2	+0.7766	0.5513	0.1900	+90	+ 8	
ϵ Cancri	7.2	1.44	1.6	19 54.7	19 7.8	- 9 40.0	+0.8995	0.5513	0.1900	+90	+15	
ϵ Cancri	7.1	1.44	1.7	20 5.3	19 14.9	- 9 33.1	+0.6936	0.5513	0.1902	+90	+ 3	
B. A. C. 2925	7.7	+1.44	+1.6	+19 56.9	19 20.7	- 9 27.5	+0.8198	0.5513	-0.1904	+90	+10	
B. A. C. 2931	7.5	1.45	1.7	20 14.7	19 44.2	- 9 4.9	+0.4376	0.5511	0.1913	+71	-10	
γ Cancri	4.9	1.48	+2.1	21 50.5	20 21.4	- 8 29.0	-1.3390	0.5507	0.1924	-54	-68	
71 Cancri	8.0	1.54	-0.2	17 48.3	18 6 25.8	+ 1 14.5	+0.8041	0.5462	0.2113	+90	+ 6	
78 Cancri	7.8	1.56	0.1	17 53.4	7 54.2	+ 2 39.8	+0.4042	0.5453	0.2140	+68	-15	
80 Cancri	6.8	+1.59	-0.3	+18 28.2	9 12.5	+ 3 55.4	-0.4746	0.5449	-0.2163	+19	-61	
83 Cancri	5.7	1.62	0.8	18 8.8	12 24.0	+ 7 0.3	-0.8401	0.5436	0.2218	- 2	-72	
7 Leonis	6.3	1.66	2.8	14 50.6	20 8.9	- 9 30.5	+0.7927	0.5403	0.2337	+90	+ 4	
11 Leonis	6.8	1.67	2.9	14 49.0	21 8.2	- 8 33.2	+0.5869	0.5398	0.2352	+82	- 8	
ψ Leonis	6.0	1.70	3.3	14 29.8	23 45.6	- 6 1.1	+0.2940	0.5386	0.2300	+60	-23	
23 Leonis	6.3	+1.73	-4.0	+13 33.0	19 3 8.7	- 2 44.7	+0.4473	0.5374	-0.2436	+71	-16	
ν Leonis	5.3	1.76	4.6	12 56.3	6 29.4	+ 0 29.4	-0.2507	0.5367	0.2479	+58	-27	
α Leonis	1.3	1.81	5.3	12 28.4	11 14.3	+ 5 4.8	-0.4646	0.5351	0.2535	+19	-66	
44 Leonis	6.0	1.86	7.2	9 18.7	19 10.5	-11 14.7	+0.7125	0.5331	0.2619	+90	- 5	
45 Leonis	6.0	1.88	6.9	10 17.4	20 17.7	-10 9.7	-0.5763	0.5326	0.2629	+14	-75	
ρ Leonis	4.0	+1.91	-7.3	+ 9 47.9	22 44.0	- 7 48.1	-0.7218	0.5325	-0.2652	+ 6	-80	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
		s	"	"	d h m	h m							
49 Leonis	6.0	+1.91	-7.7	+9 11.2	19 23 47.6	-6 46.6	-0.3810	0.5322	-0.2661	+24	-63		
37 Sextantis	6.3	1.95	9.2	6 55.1	20 5 2.2	-1 42.3	+0.5156	0.5315	0.2703	+75	-16		
38 Sextantis	7.8	1.96	9.3	6 53.5	5 36.8	-1 8.8	+0.3869	0.5314	0.2707	+66	-23		
56 Leonis	6.0	2.00	9.7	6 44.2	9 44.6	+2 51.0	-0.5803	0.5311	0.2735	+14	78		
c Leonis	5.3	2.02	10.0	6 39.4	11 59.1	+5 1.1	-1.1130	0.5310	0.2748	-18	-83		
75 Leonis	5.7	+2.05	-12.1	+2 34.7	19 50.9	-11 22.4	+0.8290	0.5311	-0.2787	+90	0		
76 Leonis	6.3	2.05	12.2	2 13.0	20 37.6	-10 37.2	+0.9770	0.5311	0.2792	+90	+9		
79 Leonis	6.0	2.08	12.5	1 58.5	23 3.3	-8 16.2	+0.5426	0.5311	0.2799	+77	-16		
83 Leonis	6.5	2.10	12.1	3 34.6	23 54.2	7 27.0	-1.3090	0.5311	0.2800	-34	-86		
r Leonis	5.1	2.12	12.2	+3 25.5	21 0 53.8	-6 29.4	-1.4340	0.5311	0.2802	-57	-87		
B. A. C. 4134	6.3	+2.32	-16.1	-3 22.9	22 0 29.8	-7 39.6	-1.2300	0.5370	-0.2798	-27	-90		
χ Virginis	5.2	2.38	17.9	7 25.7	10 12.2	+1 43.3	+0.1179	0.5414	0.2753	+48	-38		
28 Virginis	7.0	2.40	17.8	6 56.0	11 26.5	+2 55.1	-0.7155	0.5428	0.2746	-5	-90		
ψ Virginis	5.2	2.45	18.5	8 58.8	17 3.1	+8 20.3	-0.2045	0.5444	0.2706	+31	-55		
ϕ Virginis	5.9	2.51	18.9	10 11.4	23 7.6	-9 47.7	-0.6262	0.5479	0.2653	+9	-84		
50 Virginis	6.3	+2.52	-18.8	-9 46.8	23 57.4	-8 59.7	-1.2540	0.5484	-0.2645	-33	-90		
i Virginis	5.7	2.60	19.5	12 10.3	28 7 26.2	-1 46.6	-0.8200	0.5534	0.2563	-3	-90		
75 Virginis	6.0	2.63	20.0	14 50.0	10 5.7	+0 47.3	+1.1530	0.5547	0.2530	+75	+23		
83 Virginis	6.0	2.70	20.2	15 39.7	15 6.8	+5 37.6	+0.7249	0.5582	0.2462	+74	-5		
85 Virginis	6.5	2.70	20.1	15 15.0	15 35.1	+6 4.9	+0.1991	0.5588	0.2456	+48	-33		
B. A. C. 4722	5.8	+2.85	-20.1	-17 43.2	24 4 9.6	-5 48.2	-0.3037	0.5675	-0.2247	+20	-61		
B. A. C. 4923	7.3	3.09	20.0	20 57.0	21 11.7	+10 35.0	-0.6203	0.5797	0.1889	0	-86		
42 Libræ	5.7	3.26	17.6	23 29.1	25 13 59.7	+2 43.0	-0.9082	0.5899	0.1454	-22	-90		
B. A. C. 5197	6.0	3.30	17.3	24 23.7	16 6.9	+4 45.0	-0.2990	0.5910	0.1398	+11	-62		
b Scorpil	5.3	3.34	17.1	25 26.4	18 4.5	+6 37.9	-0.4814	0.5919	0.1339	+52	-17		
A ² Scorpil	5.2	+3.34	-16.9	-25 1.3	19 5.4	+7 36.2	-0.0736	0.5924	-0.1309	+22	-48		
B. A. C. 5253	5.8	3.32	16.9	24 13.7	19 12.7	+7 43.2	-0.8845	0.5926	0.1306	-22	-90		
B. A. C. 5255	6.0	3.34	16.9	25 6.4	19 19.0	+7 49.3	-0.0167	0.5926	0.1304	+25	-45		
3 Scorpil	6.7	3.34	16.9	24 56.4	19 29.5	+7 59.4	-0.2241	0.5926	0.1297	+14	-57		
4 Scorpil	6.3	3.36	16.9	25 57.9	19 47.9	+8 17.1	+0.7811	0.5927	0.1287	+64	+1		
B. A. C. 5314	5.7	+3.37	-16.4	-25 34.8	22 47.8	+11 9.5	+0.0234	0.5940	-0.1200	+26	-42		
B. A. C. 5347	6.0	3.40	16.1	26 3.1	26 0 35.8	-11 6.8	+0.2847	0.5947	0.1146	+39	-28		
σ Scorpil	3.4	3.41	15.3	25 20.9	5 33.6	-6 21.3	-0.9550	0.5964	0.0994	-29	-90		
α Scorpil	1.2	3.45	14.7	26 12.3	8 38.7	-3 23.8	-0.3833	0.5973	0.0900	+2	-68		
r Scorpil	3.2	3.50	14.3	28 0.2	11 3.1	-1 5.4	+1.2250	0.5975	0.0823	+62	+41		
B. A. C. 5800	7.5	+3.53	-11.3	-26 51.8	27 1 28.4	-11 16.2	-0.7838	0.5981	-0.0359	-24	-90		
A Ophiuchi	4.9	3.52	11.7	26 27.2	1 55.0	-10 50.7	-1.2150	0.5980	0.0345	-55	-90		
38 Ophiuchi	6.7	3.52	11.0	26 31.1	2 45.8	-10 1.9	-1.1800	0.5980	-0.0317	-52	-90		
B. A. C. 6127	5.1	3.58	6.6	28 28.2	21 51.0	+8 16.1	+0.7939	0.5917	+0.0292	+62	+3		
B. A. C. 6194	5.1	3.54	5.9	27 4.7	28 1 43.2	+11 58.9	-0.4990	0.5893	0.0413	-8	-78		
ϕ Sagittarii	3.7	+3.49	-3.3	-27 6.0	12 31.5	-1 38.7	+0.1432	0.5824	+0.0733	+28	-35		
σ Sagittarii	2.3	3.45	2.6	26 25.5	16 22.2	+2 3.0	-0.2543	0.5793	0.0842	+9	-59		
ψ Sagittarii	5.4	3.37	-1.0	25 26.1	29 0 36.3	+9 58.1	-0.5005	0.5724	0.1064	-2	-77		
λ^1 Sagittarii	5.7	3.28	+0.6	24 56.8	9 8.1	-5 49.2	-0.0122	0.5646	0.1277	+25	-44		
λ^2 Sagittarii	4.7	3.28	0.8	25 6.8	9 24.9	-5 33.1	+0.1974	0.5641	0.1282	+36	-33		
4 Capricorni	6.1	+3.07	+3.5	-22 7.8	30 3 26.7	+12 9.8	-0.2720	0.5479	+0.1670	+16	-60		
B. A. C. 7049	6.5	3.03	4.2	22 44.1	8 38.8	-7 8.4	+1.2670	0.5419	0.1768	+67	+40		
20 Capricorni	6.3	2.79	6.0	19 26.2	22 48.2	+6 33.0	-0.4233	0.5283	0.1996	+57	-21		
θ Capricorni	4.1	2.72	5.9	17 38.7	31 1 53.4	+9 32.4	-0.8712	0.5257	0.2041	-11	-90		
30 Capricorni	5.5	2.68	7.1	18 25.2	7 46.2	-8 45.8	+1.1820	0.5204	0.2118	+72	+27		
31 Capricorni	6.7	+2.67	+7.0	-17 53.8	7 55.7	-8 36.6	+0.6531	0.5201	+0.2120	+71	-9		
r Capricorni	4.4	2.64	7.0	17 16.5	9 55.0	-6 41.1	+0.4078	0.5184	0.2145	+58	-22		
42 Capricorni	5.6	2.47	7.4	14 30.5	19 43.7	+2 49.8	-0.4223	0.5102	0.2252	+17	-69		
44 Capricorni	6.1	2.46	7.6	14 52.3	20 30.0	+3 34.8	+0.1462	0.5099	0.2260	+46	-36		
45 Capricorni	6.3	+2.47	+7.8	-15 13.4	20 58.9	+4 2.8	+0.6350	0.5097	+0.2264	+73	-10		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1860.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>		
		$\Delta\alpha$	$\Delta\delta$										
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d</i>	<i>h</i>	<i>m</i>	<i>h</i>	<i>m</i>	<i>°</i>	<i>°</i>		
μ Capricorni	5.2	+2.40	+8.0	-14 2.3	1 1	47.5	+ 8 42.9	+0.4524	0.5059	+0.2309	+64 -20		
ϵ Aquarii	6.8	2.26	8.3	11 19.7	10	56.8	- 6 23.7	-0.3469	0.5001	0.2383	+23 -64		
ϵ Aquarii	5.6	2.27	8.4	12 4.4	10	59.5	- 6 21.1	+0.4760	0.5001	0.2383	+67 -19		
B. A. C. 7740	7.0	2.26	8.4	11 34.5	11	53.3	- 5 28.7	+0.1454	0.4995	0.2390	+48 -36		
40 Aquarii	7.0	2.26	8.6	12 26.2	12	29.6	- 4 53.5	+1.2300	0.4992	0.2394	+78 +29		
67 Aquarii	6.4	+2.01	+8.8	- 7 30.2	2 4	48.4	+10 58.1	-0.1756	0.4910	+0.2487	+33 -53		
B. A. C. 7986	5.9	1.92	8.6	5 32.7	11	28.8	- 6 32.4	-0.6670	0.4879	0.2512	+ 9 -88		
B. A. C. 7993	6.6	1.91	9.1	5 21.8	12	39.8	- 5 23.3	-0.5606	0.4877	0.2516	+14 -78		
B. A. C. 8017	6.1	1.88	8.8	5 16.1	15	2.6	- 3 4.3	-0.0660	0.4870	0.2523	+40 -47		
B. A. C. 8094	5.4	1.79	9.3	4 3.5	22	59.6	+ 4 39.9	+0.6137	0.4850	0.2541	+81 -12		
11 Piscium	6.4	+1.70	+9.3	- 2 21.6	3 6	53.9	-11 38.5	+0.7544	0.4837	+0.2551	+82 - 5		
12 Piscium	6.8	1.70	8.9	1 36.3	6	56.0	-11 36.5	-0.0699	0.4834	0.2551	+40 -47		
13 Piscium	6.4	1.68	9.1	1 39.4	8	19.9	-10 14.7	+0.3442	0.4833	0.2551	+63 -26		
14 Piscium	5.9	1.67	9.2	- 1 49.1	9	34.6	- 9 2.1	+0.8395	0.4833	0.2552	+88 0		
21 Piscium	5.8	1.57	9.0	+ 0 30.1	18	20.7	- 0 29.8	+0.5142	0.4826	0.2549	+74 -16		
22 Piscium	5.0	+1.54	+8.4	+ 2 21.2	19	46.9	+ 0 54.1	-1.1670	0.4827	+0.2548	-21 -88		
25 Piscium	6.4	1.54	8.8	1 30.8	20	25.2	+ 1 31.4	-0.0756	0.4827	0.2548	+39 -48		
51 Piscium	5.8	1.31	8.5	6 23.0	4 18	48.9	- 0 40.5	+0.1864	0.4859	0.2490	+54 33		
η Piscium	3.7	1.01	7.7	14 48.7	6 3	22.2	+ 6 59.3	-1.3280	0.4996	0.2279	-41 -75		
101 Piscium	6.3	1.00	7.9	14 7.9	5	40.2	+ 9 13.3	-0.0552	0.5007	0.2256	+41 -42		
104 Piscium	7.5	+0.99	+8.1	+13 45.6	7	31.3	+11 1.2	+0.7702	0.5019	+0.2239	+90 + 1		
4 Arietis	5.7	0.95	7.6	16 26.4	12	12.4	- 8 25.7	-1.1460	0.5047	0.2193	-23 -74		
B. A. C. 549	8.2	0.94	7.6	16 30.2	12	17.8	- 8 20.5	-1.1950	0.5047	0.2191	-27 -73		
ϵ Arietis	5.7	0.91	7.6	17 18.7	16	58.8	- 3 47.7	-1.0690	0.5078	0.2139	-17 73		
B. A. C. 686	7.2	0.86	7.5	19 7.7	7 1	25.5	+ 4 24.0	-1.3020	0.5137	0.2037	-41 -70		
23 Arietis	7.5	+0.84	+7.6	+19 12.8	4	6.2	+ 6 59.9	-0.8525	0.5157	+0.2002	- 3 -71		
26 Arietis	6.0	0.82	7.8	19 23.7	9	49.6	-11 27.2	+0.0713	0.5200	0.1922	+48 -30		
μ Arietis	6.0	0.78	8.0	19 34.2	15	35.4	- 5 52.1	+0.9627	0.5244	0.1834	+90 +19		
B. A. C. 920	7.0	0.75	7.9	21 12.3	23	31.5	+ 1 48.9	+0.5766	0.5306	0.1702	+82 - 2		
ϵ Arietis	4.6	0.75	7.9	20 55.6	23	41.3	+ 1 58.3	+0.9095	0.5307	0.1701	+90 +17		
64 Arietis	5.7	+0.70	+7.7	+24 21.4	8 11	22.7	-10 43.3	-0.9640	0.5400	+0.1484	-12 -66		
7 Tauri	6.0	0.68	7.8	24 7.0	16	1.2	- 6 14.2	-0.0326	0.5438	0.1390	+42 -30		
11 Tauri	6.7	0.69	7.8	24 59.7	18	52.1	- 3 29.1	-0.5999	0.5458	0.1329	+10 -60		
γ Tauri	6.3	0.69	8.0	23 57.8	20	42.0	- 1 42.9	+0.7584	0.5473	0.1289	+90 +13		
17 Tauri	4.3	0.69	8.0	23 47.3	20	44.2	- 1 40.8	+0.9535	0.5473	0.1289	+90 +25		
18 Tauri	6.3	+0.69	+7.9	+24 30.9	20	51.1	- 1 34.2	+0.1806	0.5475	+0.1287	+54 -17		
19 Tauri	5.0	0.69	8.0	24 8.5	20	52.8	- 1 32.5	+0.5887	0.5475	0.1287	+85 + 4		
20 Tauri	5.0	0.69	8.0	24 2.6	21	9.5	- 1 16.3	+0.7313	0.5475	0.1280	+90 +12		
21 Tauri	7.0	0.69	8.0	24 13.9	21	11.5	- 1 14.4	+0.5308	0.5476	0.1280	+80 + 1		
22 Tauri	7.0	0.69	8.0	24 12.3	21	15.3	- 1 10.8	+0.5687	0.5476	0.1278	+83 + 3		
23 Tauri	4.7	+0.69	+8.1	+23 37.6	21	23.3	- 1 3.0	+1.2120	0.5478	+0.1276	+90 +46		
24 Tauri	8.0	0.69	8.1	23 47.7	21	50.7	- 0 36.6	+1.0880	0.5480	0.1266	+90 +35		
η Tauri	3.1	0.69	8.1	23 47.1	21	54.3	- 0 33.1	+1.1060	0.5480	0.1263	+90 +37		
B. A. C. 1171	7.8	0.69	8.0	24 1.6	22	21.3	- 0 7.0	+0.9005	0.5484	0.1254	+90 +22		
27 Tauri	4.0	0.69	8.1	23 44.2	22	39.3	+ 0 10.3	+1.2520	0.5484	0.1247	+90 +52		
28 Tauri	6.2	+0.69	+8.1	+23 48.2	22	39.9	+ 0 10.9	+1.1800	0.5484	+0.1247	+90 +43		
NEW MOON.													
49 Aurigæ	5.7	0.89	6.9	28 6.3	11 20	6.8	- 4 56.4	-0.9694	0.5751	-0.0613	-15 -62		
39 Geminorum	6.3	0.95	6.3	26 13.1	12 5	48.2	+ 4 22.9	+0.2834	0.5736	0.0885	+61 - 8		
40 Geminorum	6.3	+0.95	+6.3	+26 3.4	6	4.5	+ 4 38.6	+0.4285	0.5735	-0.0892	+72 0		
W. vi. 1656	8.2	0.97	6.3	26 59.5	7	50.6	+ 6 20.6	-0.7134	0.5733	0.0942	+ 3 -63		
47 Geminorum	6.0	0.99	6.1	27 1.7	10	57.4	+ 9 20.4	-1.0560	0.5722	0.1027	-21 -63		
49 Geminorum	7.2	0.99	5.9	25 55.4	11	34.1	+ 9 55.7	+0.0367	0.5719	0.1042	+46 -22		
B. A. C. 2363	7.3	0.98	5.8	24 53.5	12	15.4	+10 35.4	+1.0430	0.5715	0.1061	+90 +34		
52 Geminorum	6.3	+0.98	+5.8	+25 4.0	12	21.4	+10 41.2	+0.8500	0.5715	-0.1064	+90 +21		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		α	δ	α	d h m	h m				$^{\circ}$	$^{\circ}$
A Geminorum	5.7	+1.02	+ 5.5	+25 15.1	12 15 59.3	- 9 49.1	+0.2527	0.5707	-0.1161	+59	-12
κ Geminorum	3.7	1.08	4.8	24 38.9	13 0 44.3	- 1 23.8	-0.2311	0.5671	0.1385	+31	-39
82 Geminorum	6.3	1.08	4.5	23 24.0	2 29.1	+ 0 17.2	+0.8231	0.5663	0.1428	+90	+16
7 Cancri	6.3	1.13	3.8	22 21.8	8 57.8	+ 6 31.6	+0.9251	0.5632	0.1583	+90	+21
μ^1 Cancri	6.3	1.14	3.8	22 56.0	10 0.0	+ 7 31.5	+0.1663	0.5627	0.1607	+53	-21
B. A. C. 2703	7.5	+1.14	+ 3.7	+22 45.5	10 7.4	+ 7 38.7	+0.3291	0.5624	-0.1611	+64	-13
μ^2 Cancri	5.7	1.14	3.5	21 53.1	10 38.3	+ 8 8.4	+1.1530	0.5623	0.1623	+90	+37
B. A. C. 2788	6.0	1.18	2.9	21 4.6	16 2.2	-10 39.5	+1.0810	0.5597	0.1744	+90	+30
η Cancri	5.4	1.22	2.4	20 47.7	21 23.5	- 5 29.7	+0.4072	0.5568	0.1857	+69	-11
35 Cancri	6.3	1.23	2.1	19 56.8	22 32.4	- 4 23.2	+1.0690	0.5562	0.1882	+90	+27
B. A. C. 2907	8.8	+1.25	+ 1.8	+19 57.4	14 0 12.7	- 2 46.5	+0.7413	0.5552	-0.1915	+90	+ 6
38 Cancri	7.0	1.25	1.9	20 8.7	0 27.1	- 2 32.5	+0.5017	0.5551	0.1921	+76	- 7
39 Cancri	7.0	1.25	1.9	20 22.5	0 37.3	- 2 22.7	+0.2310	0.5549	0.1923	+57	-21
40 Cancri	7.3	1.25	1.9	20 20.3	0 39.5	- 2 20.6	+0.2620	0.5549	0.1923	+59	-19
B. A. C. 2919	7.3	1.25	1.9	20 2.2	0 44.4	- 2 15.9	+0.5585	0.5549	0.1925	+81	- 4
ϵ Cancri	7.2	+1.25	+ 1.8	+19 54.7	0 46.5	- 2 13.9	+0.6808	0.5549	-0.1927	+90	+ 2
ϵ Cancri	7.1	1.25	1.8	20 5.3	0 53.7	- 2 7.0	+0.4741	0.5549	0.1929	+74	- 9
B. A. C. 2925	7.7	1.25	1.8	19 56.9	0 59.4	- 2 1.4	+0.6016	0.5547	0.1931	+84	- 2
B. A. C. 2931	7.5	1.26	1.8	20 14.7	1 22.8	- 1 38.9	+0.2171	0.5546	0.1938	+56	-22
JUPITER				18 57.9	4 4.0	+ 0 56.7	+1.0140	0.5455	0.1970	+90	+22
71 Cancri	8.0	+1.33	+ 0.2	+17 48.3	11 59.6	+ 8 35.7	+0.5720	0.5488	-0.2137	+81	- 6
78 Cancri	7.8	1.34	0.1	17 53.4	13 27.7	+10 0.7	+0.1683	0.5481	0.2162	+53	-27
80 Cancri	6.8	1.36	+ 0.1	18 28.2	14 45.5	+11 15.8	-0.7125	0.5473	0.2184	+ 5	-72
83 Cancri	5.7	1.39	- 0.4	18 8.8	17 56.1	- 9 40.2	-1.0780	0.5456	0.2237	-18	-72
7 Leonis	6.3	1.42	2.0	14 50.6	15 1 39.5	- 2 12.4	+0.5425	0.5419	0.2354	+78	-10
11 Leonis	6.8	+1.43	- 2.1	+14 49.0	2 38.7	- 1 15.4	+0.3370	0.5413	-0.2368	+63	-21
ψ Leonis	6.0	1.45	2.5	14 29.8	5 15.9	+ 1 16.6	+0.0410	0.5400	0.2403	+46	-36
23 Leonis	6.3	1.47	3.1	13 33.1	8 38.9	+ 4 32.8	+0.1895	0.5383	0.2447	+54	-29
ν Leonis	5.3	1.50	3.6	12 56.3	11 59.7	+ 7 47.0	-0.0086	0.5369	0.2488	+43	-40
α Leonis	1.3	1.55	4.2	12 28.4	16 45.1	+11 37.0	-0.7280	0.5352	0.2542	+ 6	-77
44 Leonis	6.0	+1.59	- 5.9	+ 9 18.7	16 0 43.1	- 3 54.8	+0.4458	0.5325	-0.2618	+70	-19
45 Leonis	6.0	1.62	5.7	10 17.4	1 50.7	- 2 49.4	-0.8489	0.5320	0.2628	- 1	80
ρ Leonis	4.0	1.64	6.1	9 50.4	4 17.9	- 0 26.9	-1.0370	0.5310	0.2649	-13	-80
49 Leonis	6.0	1.64	6.6	9 11.2	5 21.9	+ 0 35.0	-0.6527	0.5310	0.2657	+10	-80
37 Sextantis	6.3	1.68	7.8	6 55.2	10 38.9	+ 5 41.7	+0.2428	0.5295	0.2695	+57	-30
38 Sextantis	7.8	+1.69	- 7.8	+ 6 53.6	11 14.0	+ 6 15.7	+0.1120	0.5295	-0.2699	+50	-37
56 Leonis	6.6	1.74	8.3	6 44.3	15 24.0	+10 17.7	-0.8598	0.5288	0.2724	- 1	83
d Leonis	5.3	1.73	9.3	4 10.4	17 35.1	-11 35.4	+1.1540	0.5284	0.2735	+90	+21
c Leonis	5.3	1.76	8.5	6 39.5	17 39.9	-11 30.8	-1.3950	0.5284	0.2735	-47	-83
75 Leonis	5.7	1.80	10.5	2 34.7	17 1 37.5	- 3 48.3	+0.5619	0.5275	0.2768	+78	-15
76 Leonis	6.3	+1.80	-10.7	+ 2 13.0	2 24.7	- 3 2.7	+0.7109	0.5275	-0.2769	+90	- 7
79 Leonis	6.0	1.83	11.0	+ 1 58.5	4 52.5	- 0 39.6	+0.2724	0.5275	0.2776	+59	-30
χ Virginis	5.2	2.17	16.6	- 7 25.7	18 16 42.3	+10 0.8	-0.1246	0.5343	0.2708	+36	-50
28 Virginis	7.0	2.19	16.5	6 56.0	17 58.3	+11 14.4	-0.9663	0.5351	0.2701	- 9	-90
ψ Virginis	5.2	2.25	17.4	8 58.8	23 43.5	- 7 11.8	-0.4409	0.5375	0.2659	+19	-70
ζ Virginis	5.9	+2.33	-17.9	-10 11.4	19 5 56.7	- 1 11.0	-0.8561	0.5404	-0.2603	- 4	-90
i Virginis	5.7	2.44	18.8	12 10.3	14 28.4	+ 7 3.3	-1.0390	0.5456	0.2512	-17	90
75 Virginis	6.0	2.48	19.5	14 50.0	17 12.2	+ 9 41.4	+0.9651	0.5471	0.2478	+75	+ 9
83 Virginis	6.0	2.57	19.9	15 39.7	22 21.3	- 9 20.2	+0.5414	0.5503	0.2409	+68	-15
85 Virginis	6.5	2.58	19.8	15 15.0	22 50.4	- 8 52.1	+0.0067	0.5505	0.2403	+38	-43
B. A. C. 4722	5.8	+2.78	-20.1	-17 43.2	20 11 45.3	+ 3 35.1	-0.4742	0.5595	-0.2197	+11	-73
B. A. C. 4923	7.3	3.11	20.7	20 57.0	21 5 14.3	- 3 34.6	+0.7561	0.5720	0.1842	- 8	90
42 Libræ	5.7	3.38	18.5	23 29.1	22 26.5	-11 2.3	-1.0070	0.5428	0.1414	-29	90
B. A. C. 5197	6.0	3.42	18.2	24 23.7	22 0 36.6	- 8 57.4	-0.3868	0.5441	0.1356	+ 7	-68
δ Scorpii	5.3	3.47	18.1	25 26.4	2 36.7	- 7 2.1	+0.4071	0.5452	0.1301	+47	-21
A ¹ Scorpii	5.2	+3.48	17.9	-25 1.3	3 38.9	- 6 2.4	-0.1501	0.5861	-0.1273	+18	-52

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		α	δ	α	d h m	h m				α	δ
B. A. C. 5253	5.8	+3.46	-17.8	-24 13.7	22 3 46.4	- 5 55.2	-0.9703	0.5861	-0.1270	-28	-90
B. A. C. 5255	6.0	3.48	17.9	25 6.4	3 52.8	- 5 49.1	-0.0930	0.5861	0.1266	+ 2	49
3 Scorpil	6.7	3.48	17.8	24 56.4	4 3.5	- 5 38.7	-0.2856	0.5862	0.1261	+11	-61
4 Scorpil	6.3	3.50	17.9	25 57.9	4 22.3	- 5 20.7	+0.7150	0.5863	0.1251	+64	- 3
B. A. C. 5314	5.7	3.54	17.4	25 34.8	7 25.9	- 2 24.5	-0.0440	0.5879	0.1163	+22	-46
B. A. C. 5347	6.0	+3.57	-17.1	-26 3.1	9 16.2	- 0 38.6	+0.2251	0.5888	-0.1112	+36	-31
σ Scorpil	3.4	3.63	16.3	25 20.9	14 19.8	+ 4 12.8	-1.0150	0.5909	0.0962	-34	-90
α Scorpil	1.2	3.68	15.7	26 12.4	17 28.3	+ 7 13.7	-0.4290	0.5919	0.0870	0	-72
γ Scorpil	3.2	3.75	15.4	28 0.3	19 55.1	+ 9 34.5	+1.1960	0.5926	0.0792	+62	+37
B. A. C. 5800	7.5	3.90	12.3	26 51.8	23 10 33.6	- 0 23.1	-0.7943	0.5946	0.0334	-25	-90
A Ophiuchi	4.9	+3.87	-12.6	-26 27.2	11 0.9	+ 0 3.1	-1.2290	0.5946	-0.0321	-57	-90
38 Ophiuchi	6.7	3.90	11.9	26 31.1	11 52.0	+ 0 52.1	-1.1890	0.5944	0.0293	-53	-90
43 Ophiuchi	5.8	3.96	11.4	28 2.7	14 0.6	+ 2 55.5	+0.3192	0.5943	-0.0225	+33	-25
3 Sagittarii	4-6	4.02	9.1	27 47.7	23 15.4	+11 47.6	-0.0086	0.5928	+0.0069	+14	+44
B. A. C. 6127	5.1	4.09	7.1	28 28.2	24 7 8.4	- 4 38.5	+0.8383	0.5900	0.0314	+62	+ 6
B. A. C. 6194	5.1	+4.06	- 6.1	-27 4.9	11 2.0	- 0 54.3	-0.4490	0.5883	+0.0434	- 5	-73
ϕ Sagittarii	3.7	4.08	3.2	27 6.0	21 52.8	+ 9 30.6	+0.2178	0.5826	0.0755	+32	-31
σ Sagittarii	2.3	4.07	2.3	26 25.6	25 1 43.9	-10 47.3	-0.1715	0.5798	0.0864	+13	-54
ψ Sagittarii	5.4	4.03	- 0.2	25 26.1	9 58.0	- 2 52.3	-0.4017	0.5737	0.1086	+ 3	-69
λ^1 Sagittarii	5-7	3.99	+ 1.8	25 56.8	18 28.7	+ 5 19.3	+0.1065	0.5665	0.1300	+31	-38
λ^2 Sagittarii	4.7	+3.98	+ 1.8	-25 6.8	18 45.4	+ 5 35.4	+0.3178	0.5663	+0.1308	+43	-26
4 Capricorni	6.1	3.81	5.5	22 7.8	26 12 41.3	- 1 7.2	-0.1145	0.5498	0.1698	-24	-50
20 Capricorni	6.3	3.60	9.2	19 26.1	27 7 52.6	- 6 34.6	+0.6155	0.5322	0.2026	+68	-10
θ Capricorni	4.1	3.53	9.3	17 38.6	10 55.9	- 3 37.2	-0.6733	0.5295	0.2070	+ 1	-90
31 Capricorni	6.7	3.50	10.8	17 53.7	16 54.2	+ 2 9.8	+0.8559	0.5243	0.2149	+72	+ 3
ϵ Capricorni	4.4	+3.46	+10.8	-17 16.4	18 52.2	+ 4 4.0	+0.6152	0.5226	+0.2175	+70	-11
42 Capricorni	5.6	3.30	11.6	14 30.5	28 4 34.2	-10 31.7	-0.1940	0.5145	0.2282	+28	-54
44 Capricorni	6.1	3.30	11.9	14 52.3	5 20.1	- 9 47.2	+0.3719	0.5140	0.2290	+58	-24
45 Capricorni	6.3	3.31	12.1	15 13.4	5 48.6	- 9 19.5	+0.8610	0.5135	0.2294	+75	+ 3
μ Capricorni	5.2	3.24	12.4	14 2.3	10 33.8	- 4 42.9	+0.6844	0.5101	0.2337	+76	- 7
ϵ^1 Capricorni	6.8	+3.12	+13.0	-11 19.7	19 36.7	+ 4 4.1	-0.0995	0.5041	+0.2411	+35	-49
ϵ^2 Capricorni	5.6	3.13	13.2	12 4.4	19 39.3	+ 4 6.6	+0.7196	0.5041	0.2411	+78	- 6
B. A. C. 7740	7.0	3.11	13.2	11 34.5	20 32.5	+ 4 58.4	+0.3925	0.5032	0.2417	+62	-23
67 Aquarii	6.4	2.89	14.0	7 30.2	29 13 16.4	- 2 46.1	+0.0892	0.4942	0.2508	+47	-39
B. A. C. 7986	5.9	2.80	14.1	5 32.3	19 52.6	+ 3 39.2	-0.3941	0.4912	0.2531	+23	-66
B. A. C. 7993	6.6	+2.79	+14.1	- 5 21.8	21 3.0	+ 4 47.7	-0.2901	0.4909	+0.2535	+28	-60
B. A. C. 8017	6.1	2.77	14.3	5 16.1	23 24.4	+ 7 5.2	+0.2046	0.4898	0.2542	+54	-33
B. A. C. 8094	5.4	2.68	14.7	4 3.5	30 7 17.1	- 9 14.9	+0.8878	0.4874	0.2557	+86	+ 3
11 Piscium	6.4	2.59	14.8	2 21.6	15 7.6	- 1 37.0	+1.0300	0.4856	0.2562	+88	+12
12 Piscium	6.8	2.58	14.6	1 36.3	15 9.7	- 1 35.0	+0.2090	0.4856	0.2562	+55	-33
13 Piscium	6.4	+2.57	+14.7	- 1 39.4	16 33.0	- 0 13.9	+0.6201	0.4854	+0.2563	+83	-12
14 Piscium	5.9	2.56	14.9	- 1 49.1	17 47.1	+ 0 58.2	+1.1160	0.4853	0.2564	+88	+18
λ Piscium	4.5	+2.47	+14.1	+ 1 12.6	22 18.5	+ 5 22.5	-1.0640	0.4846	+0.2561	-14	-89

JULY.

21 Piscium	5.8	+2.44	+14.6	+ 0 30.1	1 2 29.9	+ 9 27.2	+0.7903	0.4843	+0.2557	+90	- 3
22 Piscium	5.0	2.41	14.1	2 21.3	3 55.5	+10 50.5	-0.8882	0.4842	0.2555	- 3	-88
25 Piscium	6.4	2.41	14.4	1 30.9	4 33.5	+11 27.4	+0.2004	0.4842	0.2555	+55	-33
45 Piscium	6.9	2.21	13.6	7 7.2	23 5.3	+ 5 29.8	-1.3010	0.4853	0.2502	-34	-83
51 Piscium	5.8	+2.19	+14.1	+ 6 23.1	2 2 52.4	+ 9 10.8	+0.4533	0.4857	+0.2484	+70	-19
7 Piscium	3.7	1.02	12.3	14 48.8	3 11 26.4	- 7 8.7	-1.0910	0.4978	0.2262	-18	-75
101 Piscium	6.3	1.86	12.5	14 8.0	13 44.8	- 4 54.2	+0.1803	0.4991	0.2241	+54	-29
104 Piscium	7.5	1.85	12.7	13 45.7	15 36.2	- 3 6.0	+1.0040	0.5002	0.2222	+90	+16
105 Piscium	6.3	1.84	12.0	15 52.9	15 48.4	- 2 54.2	-1.2910	0.5005	0.2220	-36	-74
4 Arietis	5.7	+1.81	+11.9	+16 26.5	20 18.0	+ 1 27.7	-0.9185	0.5030	+0.2173	- 6	-74

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
B. A. C. 549	8.2	+1.81	+11.9	+16 30.3	8 20 23.4	+ 1 32.9	-0.9701	0.5030	+0.2171	-10	-73
ϵ Arietis	5.7	1.78	11.7	17 18.8	4 1 5.4	+ 6 6.7	-0.8517	0.5059	0.2119	- 2	-73
15 Arietis	5.7	1.72	11.3	19 0.8	7 54.7	-11 16.1	-1.3030	0.5106	0.2038	-41	-71
B. A. C. 686	7.2	1.70	11.3	19 7.8	9 33.8	- 9 39.9	-1.0930	0.5117	0.2017	-20	-71
θ Arietis	5.7	1.69	11.2	19 25.4	11 43.6	- 7 34.0	-0.9831	0.5133	0.1988	-12	-71
23 Arietis	7.5	+1.68	+11.3	+19 12.9	12 14.7	- 7 3.9	-0.6516	0.5135	+0.1981	+ 9	-70
26 Arietis	6.0	1.64	11.2	19 23.8	17 59.9	- 1 29.1	+0.2669	0.5178	0.1900	+59	-20
μ Arietis	6.0	1.62	11.3	19 34.3	23 47.0	+ 4 7.2	+1.1480	0.5220	0.1812	+90	+33
B. A. C. 920	7.0	1.55	11.0	21 12.4	5 7 44.8	+11 50.0	+0.7498	0.5284	0.1682	+90	+ 7
ϵ Arietis	4.6	1.55	11.1	20 55.7	7 54.7	+11 59.5	+1.0810	0.5285	0.1678	+90	+29
64 Arietis	5.7	+1.50	+ 9.8	+24 21.5	19 38.3	- 0 39.9	-0.8117	0.5380	+0.1462	- 2	-66
7 Tauri	6.0	1.46	9.8	24 7.1	6 0 17.4	+ 3 49.8	+0.1067	0.5416	0.1369	+50	-22
11 Tauri	6.7	1.44	9.6	24 59.8	3 8.7	+ 6 35.3	-0.4624	0.5438	0.1309	+18	-52
γ Pleiadum	6.3	1.44	9.7	23 57.9	4 58.8	+ 8 21.7	+0.8917	0.5454	0.1269	+90	+22
17 Tauri	4.3	1.44	9.7	23 47.4	5 0.9	+ 8 23.7	+1.0860	0.5454	0.1269	+90	+35
18 Tauri	6.3	+1.44	+ 9.5	+24 31.0	5 7.9	+ 8 30.4	+0.3141	0.5457	+0.1267	+63	-10
19 Tauri	5.0	1.44	9.7	24 8.6	5 9.5	+ 8 32.0	+0.7219	0.5457	0.1266	+90	+11
20 Tauri	5.0	1.44	9.7	24 2.7	5 26.2	+ 8 48.2	+0.8626	0.5458	0.1260	+90	+20
21 Tauri	7.0	1.43	9.7	24 14.0	5 28.3	+ 8 50.2	+0.6640	0.5458	0.1260	+90	+ 8
22 Tauri	7.0	1.43	9.7	24 12.4	5 32.1	+ 8 53.8	+0.7001	0.5458	0.1258	+90	+10
24 Tauri	8.0	+1.42	+ 9.5	+23 47.8	6 7.6	+ 9 28.1	+1.2180	0.5463	+0.1245	+90	+47
7 Tauri	3.1	1.42	9.5	23 47.2	6 11.2	+ 9 31.6	+1.2360	0.5466	0.1243	+90	+50
B. A. C. 1171	7.8	1.42	9.8	24 1.7	6 38.2	+ 9 57.7	+1.0300	0.5467	0.1234	+90	+31
28 Tauri	6.2	1.42	9.7	23 49.3	6 56.9	+10 15.7	+1.2910	0.5469	0.1227	+90	+58
B. A. C. 1192	6.0	1.42	9.4	25 16.1	7 25.3	+10 43.1	-0.2163	0.5471	0.1217	+32	-37
ρ Tauri	6.0	+1.38	+ 8.9	+26 12.8	16 27.6	- 4 33.5	-0.2281	0.5543	+0.1009	+31	-35
ϕ Tauri	5.3	1.37	8.6	27 6.3	20 34.3	- 0 35.6	-0.7923	0.5572	0.0910	- 2	-63
χ Tauri	5.7	1.36	9.0	25 23.1	21 33.8	+ 0 21.7	+1.1470	0.5578	0.0885	+90	+44
W. iv. 1421	6.0	1.30	7.8	27 54.1	7 17 22.3	- 4 33.4	-0.3017	0.5701	0.0366	+26	-34
22 Aurigæ	7.0	1.29	7.4	28 50.6	22 58.4	+ 0 50.0	-1.1410	0.5723	0.0209	-30	-61
β Tauri	1.8	+1.28	+ 7.4	+28 31.3	8 0 10.3	+ 1 59.2	-0.7764	0.5728	+0.0175	- 2	-61
136 Tauri	5.3	1.25	7.0	27 35.3	11 11.6	-11 24.8	+0.2304	0.5765	-0.0142	+58	- 3
NEW MOON.											
68 Cancri	7.5	1.31	0.3	17 29.3	11 17 5.8	- 8 26.9	+1.1580	0.5560	0.2145	+90	+31
71 Cancri	8.0	+1.32	+ 0.1	+17 48.3	18 51.1	- 6 45.3	+0.4525	0.5552	-0.2178	+72	-12
B. A. C. 3103	7.5	1.32	+ 0.1	17 31.9	19 4.4	- 6 32.5	+0.6839	0.5551	0.2181	+90	0
JUPITER				17 28.0	20 47.9	- 4 52.7	+0.3724	0.5455	0.2182	+66	-17
80 Cancri	6.8	1.34	0.0	18 28.2	21 33.5	- 4 8.7	-0.8194	0.5538	0.2225	- 1	-72
83 Cancri	5.7	1.36	- 0.4	18 8.8	12 0 40.3	- 1 8.4	-1.1910	0.5520	0.2278	-27	-72
7 Leonis	6.3	+1.35	- 1.6	+14 50.6	8 14.3	+ 6 9.9	+0.4052	0.5480	-0.2395	+68	-17
11 Leonis	6.8	1.36	2.0	14 49.0	9 12.3	+ 7 5.8	+0.1983	0.5475	0.2408	+55	-28
ψ Leonis	6.0	1.37	2.1	14 29.8	11 46.3	+ 9 34.5	-0.0982	0.5464	0.2444	+38	-44
21 Leonis	6.8	1.36	2.8	12 19.7	15 0.4	-11 17.9	+1.3070	0.5445	0.2486	+90	+41
23 Leonis	6.3	1.38	2.5	13 33.1	15 5.3	-11 13.2	+0.0440	0.5445	0.2488	+46	-37
ν Leonis	5.3	+1.40	- 3.0	+12 56.4	18 22.1	- 8 3.1	-0.1590	0.5430	-0.2530	+35	-48
A Leonis	4.7	1.40	3.8	10 30.2	22 49.8	- 3 44.5	+1.1730	0.5411	0.2578	+90	+26
a Leonis	1.3	1.42	3.6	12 28.4	23 2.1	- 3 32.5	-0.8770	0.5411	0.2582	- 3	-78
44 Leonis	6.0	1.45	5.0	9 18.7	18 6 51.3	+ 4 0.9	-0.2769	0.5379	0.2657	+59	-27
45 Leonis	6.0	1.47	4.9	10 17.4	7 57.8	+ 5 5.2	-1.0070	0.5373	0.2666	-11	-80
ρ Leonis	4.0	+1.48	- 5.2	+ 9 50.4	10 22.4	+ 7 25.1	-1.1980	0.5365	-0.2685	-25	-80
48 Leonis	5.5	1.46	5.8	7 29.2	11 19.4	+ 8 20.2	+0.9292	0.5363	0.2694	+90	+ 7
49 Leonis	6.0	1.48	5.4	9 11.2	11 25.2	+ 8 25.8	-0.8162	0.5360	0.2694	+ 1	-80
37 Sextantis	6.3	1.50	6.6	6 55.2	16 37.0	-10 32.7	0.5346	0.2729	+0.2729	+47	-39
38 Sextantis	7.8	1.51	6.6	6 53.6	17 11.5	- 9 59.3	-0.0624	0.5343	0.2733	+40	-46
56 Leonis	6.6	+1.54	- 7.1	+ 6 44.3	21 17.7	- 6 1.1	-1.0340	0.5332	-0.2755	-12	-83

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	γ	α'	γ'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
<i>d</i> Leonis	5.3	+1.52	-8.0	+ 4 10.4	13 23 26.9	- 3 56.1	+0.9566	0.5330	-0.2765	+90	+ 8
75 Leonis	5.7	1.59	9.1	2 34.8	14 7 22.6	+ 3 44.1	+0.3703	0.5315	0.2795	+65	-24
76 Leonis	6.3	1.60	9.2	2 13.1	8 9 3	+ 4 29.2	+0.5184	0.5314	0.2798	+75	-17
79 Leonis	6.0	1.62	9.5	+ 1 58.5	10 35 3	+ 6 50.5	+0.0824	0.5310	0.2800	+48	-39
<i>v</i> Leonis	4.4	1.66	10.8	- 0 15.1	16 43.8	-11 12.9	+0.6074	0.5308	0.2806	-13	-82
χ Virginis	5.2	+1.92	-15.2	- 7 25.6	15 22 11.8	- 6 42.3	-0.3249	0.5344	-0.2707	+26	-62
28 Virginis	7.0	1.94	15.2	6 56.0	23 27.8	- 5 28.7	1.1650	0.5348	0.2698	-23	-90
ψ Virginis	5.2	2.00	16.1	8 58.8	16 5 13.3	+ 0 54	-0.6366	0.5367	0.2652	+ 9	-85
ξ Virginis	5.9	2.08	16.6	10 11.4	11 27.8	+ 6 7.4	-1.0520	0.5392	0.2592	-17	-90
<i>i</i> Virginis	5.7	2.19	17.5	12 10.3	20 2.3	- 9 35.5	-1.2310	0.5437	0.2495	-32	-90
75 Virginis	6.0	+2.23	-18.4	-14 50.0	22 47.3	- 6 56.2	+0.7811	0.5443	-0.2460	+70	- 2
83 Virginis	6.0	2.32	18.8	15 39.7	17 3 59.2	- 1 54.9	+0.3614	0.5470	0.2390	+57	-25
85 Virginis	6.5	2.32	18.7	15 15.0	4 28.6	- 1 26.6	-0.1740	0.5474	0.2381	+29	-53
B. A. C. 4722	5.8	2.54	19.2	17 43.2	17 32.7	+11 10.0	-0.6482	0.5550	0.2169	+ 2	-89
B. A. C. 4923	7.3	2.92	20.4	20 57.0	18 11 18.3	+ 4 16.8	-0.9149	0.5659	0.1813	-18	-90
42 Libræ	5.7	+3.23	-18.4	-23 29.1	19 4 50.5	- 2 50.8	-1.1480	0.5762	0.1386	-40	-90
B. A. C. 5197	6.0	3.29	18.5	24 23.7	7 3	- 0 43.4	-0.5184	0.5776	0.1328	0	-78
<i>b</i> Scorpii	5.3	3.34	18.5	25 26.4	9 5.9	+ 1 14.7	+0.2849	0.5784	0.1273	+40	-28
A ² Scorpii	5.2	3.35	18.2	25 1.3	10 9.5	+ 2 15.8	-0.2764	0.5786	0.1244	+11	-61
B. A. C. 5253	5.8	3.34	18.0	24 13.7	10 17.1	+ 2 23.1	-1.1040	0.5786	0.1240	-37	-90
B. A. C. 5255	6.0	+3.35	-18.2	-25 6.4	10 23.7	+ 2 29.4	-0.2184	0.5786	-0.1237	-14	-57
3 Scorpii	6.7	3.36	18.2	24 56.4	10 34.7	+ 2 40.0	-0.4112	0.5789	0.1232	+ 4	-70
4 Scorpii	6.3	3.38	18.4	25 57.9	10 53.8	+ 2 58.4	+0.5991	0.5792	0.1224	+58	-10
B. A. C. 5314	5.7	3.43	17.8	25 34.8	14 1.4	+ 5 58.6	-0.1657	0.5805	0.1138	+16	-54
B. A. C. 5347	6.0	3.48	17.7	26 3.1	15 54.0	+ 7 46.8	+0.1111	0.5815	0.1085	+29	-37
σ Scorpii	3.4	+3.55	-16.7	-25 20.9	21 4.1	-11 15.3	-1.1350	0.5833	-0.0938	-42	-90
α Scorpii	1.2	3.62	16.3	26 12.4	20 0 16.8	- 8 10.3	-0.5379	0.5845	0.0843	- 6	-81
τ Scorpii	3.2	3.71	16.3	28 0.3	2 47.0	- 5 46.0	+1.1090	0.5852	0.0769	+62	+27
B. A. C. 5800	7.5	3.94	12.8	26 51.8	17 44.6	+ 8 35.6	-0.8814	0.5875	0.0377	-29	-90
43 Ophiuchi	5.8	4.02	12.3	28 2.7	21 16.0	+11 58.6	+0.2464	0.5873	-0.0207	+29	-30
3 Sagittarii	4.6	+4.16	- 9.9	-27 47.7	21 6 42.1	- 2 58.0	-0.0725	0.5861	+0.0083	+11	-48
B. A. C. 6127	5.1	4.26	8.0	28 28.2	14 44.4	+ 4 45.0	+0.7956	0.5841	0.0326	+62	+ 3
B. A. C. 6194	5.1	4.26	6.7	27 4.9	18 42.4	+ 8 33.8	-0.4963	0.5826	0.0444	+ 8	-78
ϕ Sagittarii	3.7	4.32	3.8	27 6.0	22 5 44.5	- 4 50.0	+0.1900	0.5775	0.0763	+31	-33
σ Sagittarii	2.3	4.32	2.6	26 25.5	9 39.3	- 1 4.1	-0.1954	0.5748	0.0872	+12	-56
ψ Sagittarii	5.4	+4.33	- 0.3	-25 26.1	18 0.6	+ 6 58.2	0.4131	0.5699	+0.1094	+ 3	-70
χ^1 Sagittarii	5.4	4.32	+ 0.8	24 42.6	22 5.1	+10 53.6	-0.7099	0.5666	0.1198	-12	-90
χ^2 Sagittarii	6.3	4.32	0.8	24 37.0	22 8.0	+10 56.3	-0.8028	0.5667	0.1199	-17	-90
η^1 Sagittarii	5.7	4.35	2.0	24 56.8	23 2 37.7	- 8 43.9	+0.1106	0.5633	0.1308	+32	-37
η^2 Sagittarii	4.7	4.36	2.0	25 6.8	2 54.6	- 8 27.6	+0.3215	0.5632	0.1315	+43	-26
53 Sagittarii	6.7	+4.32	+ 2.5	-23 39.9	4 16.2	- 7 9.0	-1.0240	0.5624	+0.1348	-30	-90
B. A. C. 6727	6.2	4.31	2.4	23 40.0	4 23.7	- 7 1.8	-1.0058	0.5622	0.1350	28	-90
4 Capricorni	6.1	4.30	6.7	22 7.8	21 0.7	+ 9 0.0	-0.0849	0.5487	0.1709	+26	-48
20 Capricorni	6.3	4.16	11.1	19 26.1	24 16 17.7	+ 3 38.4	+0.6739	0.5322	0.2040	+70	- 7
θ Capricorni	4.1	4.10	11.6	17 38.6	19 21.4	+ 6 36.2	-0.6122	0.5294	0.2084	+ 4	-85
31 Capricorni	6.7	+4.10	+12.5	-17 53.7	25 1 20.3	-11 36.3	+0.9287	0.5248	+0.2165	+72	+ 8
ι Capricorni	4.4	4.07	13.1	17 16.4	3 18.3	- 9 42.1	+0.6860	0.5232	0.2191	+72	- 7
42 Capricorni	5.6	3.94	14.5	14 30.5	13 0.0	- 0 18.2	-0.1078	0.5154	0.2209	+33	-49
44 Capricorni	6.1	3.94	14.8	14 52.3	13 45.8	+ 0 26.3	+0.4582	0.5153	0.2308	+64	-20
45 Capricorni	6.3	3.95	15.0	15 13.4	14 14.3	+ 0 53.9	+0.9497	0.5148	0.2313	+75	+ 8
μ Capricorni	5.2	+3.90	+15.6	-14 2.2	18 59.0	+ 5 30.1	+0.7784	0.5119	+0.2357	+71	- 2
ϵ^1 Aquarii	6.8	3.79	16.7	11 19.6	26 4 0.3	- 9 44.4	+0.0054	0.5058	0.2430	+41	-43
ϵ^2 Aquarii	5.6	3.80	16.8	12 4.3	4 2.9	- 9 41.9	+0.8243	0.5058	0.2430	+78	0
B. A. C. 7740	7.0	3.79	16.8	11 34.4	4 56.0	- 8 50.3	+0.4974	0.5053	0.2438	+69	-18
B. A. C. 7774	6.7	3.73	16.9	9 33.2	8 23.0	- 5 27.4	-1.0950	0.5039	0.2454	-19	-90
67 Aquarii	6.4	+3.61	+18.3	- 7 30.1	21 35.3	+ 7 20.6	+0.2127	0.4963	+0.2528	+54	-33

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		<i>s</i>	<i>"</i>	<i>°</i> <i>'</i>	<i>d</i> <i>h</i> <i>m</i>	<i>h</i> <i>m</i>				<i>°</i>	<i>°</i>
B. A. C. 7986	5.9	+3.53	+18.7	- 5 32.2	27 4 9.5	-10 16.1	-0.2661	0.4934	+0.2552	+29	-58
B. A. C. 7993	6.6	3.52	19.0	5 21.7	5 19.5	- 9 8.0	-0.1586	0.4930	0.2555	+35	-52
B. A. C. 8017	6.1	3.50	19.0	5 16.0	7 40.1	- 6 51.2	+0.3330	0.4920	0.2562	+62	-26
B. A. C. 8094	5.4	3.43	19.6	4 3.4	15 30.2	+ 0 46.0	+1.0240	0.4898	0.2575	+86	+11
11 Piscium	6.4	3.35	19.9	2 21.5	23 18.2	+ 8 21.4	+1.1730	0.4877	0.2580	+88	+22
12 Piscium	6.8	+3.35	+19.7	- 1 36.2	23 20.3	+ 8 23.4	+0.3519	0.4877	+0.2580	+63	-26
13 Piscium	6.4	3.34	19.8	1 39.3	28 0 43.2	+ 9 44.1	+0.7661	0.4874	0.2579	+80	- 4
14 Piscium	5.9	3.33	20.0	- 1 49.0	1 56.9	+10 55.8	+1.2600	0.4874	0.2579	+88	+29
15 Piscium	6.6	3.29	19.3	+ 0 44.6	2 42.8	+11 40.4	-1.3590	0.4871	0.2578	-40	-89
21 Piscium	5.8	3.24	20.0	0 30.2	10 37.1	- 4 37.9	+0.9426	0.4863	0.2574	+90	+ 6
22 Piscium	5.0	+3.21	+19.6	+ 2 21.4	12 2.3	- 3 14.9	-0.7369	0.4860	+0.2569	+ 6	-84
25 Piscium	6.4	3.21	19.8	1 31.0	12 40.2	- 2 38.1	+0.3510	0.4860	0.2566	+63	-26
51 Piscium	5.8	3.02	19.7	6 23.2	29 10 54.8	- 4 59.0	+0.6139	0.4870	0.2491	+83	-11
7 Piscium	3.7	2.78	17.6	14 48.9	30 19 30.4	+ 2 43.0	-0.9367	0.4972	0.2255	- 7	-75
101 Piscium	6.3	2.78	17.7	14 8.1	21 49.2	+ 4 57.9	+0.3355	0.4980	0.2232	+63	-21
104 Piscium	7.5	+2.78	+17.8	+13 45.8	23 41.0	+ 6 46.5	+1.1630	0.4990	+0.2214	+90	+28
105 Piscium	6.3	2.78	17.1	15 53.0	23 53.4	+ 6 58.5	-1.1390	0.4991	0.2212	-22	-74
4 Arietis	5.7	2.75	17.0	16 26.6	31 4 24.2	+11 21.7	-0.7700	0.5014	0.2165	+ 2	-70
B. A. C. 549	8.2	2.75	17.0	16 30.4	4 29.6	+11 26.9	-0.8198	0.5014	0.2163	- 1	-73
Arietis	5.7	2.72	16.6	17 18.9	9 13.2	- 7 57.7	-0.7933	0.5042	0.2110	+ 6	-73
B. A. C. 686	7.2	+2.66	+15.9	+19 7.9	17 45.1	+ 0 19.2	-0.9501	0.5048	+0.2004	- 9	-71
8 Arietis	5.7	2.64	15.8	19 25.5	19 55.7	+ 2 26.0	-0.8414	0.5104	0.1975	- 2	-71
23 Arietis	7.5	+2.64	+15.8	+19 13.0	20 27.1	+ 2 56.4	-0.5089	0.5110	+0.1967	+17	-62

AUGUST.

26 Arietis	6.0	+2.60	+15.6	+19 23.9	1 2 15.1	+ 8 33.9	+0.4092	0.5148	+0.1886	+69	-13
ν Arietis	5.7	2.55	14.7	21 31.0	6 18.4	-11 30.3	-1.1690	0.5175	0.1824	-28	-68
μ Arietis	6.0	2.53	15.4	19 34.4	8 5.3	+ 9 46.7	+1.2900	0.5188	0.1797	+90	+48
B. A. C. 920	7.0	2.47	14.5	21 12.4	16 7.8	- 1 59.3	+0.8863	0.5249	0.1665	+90	+17
ε Arietis	4.6	+2.47	+14.6	+20 55.7	16 17.8	- 1 49.6	+1.2190	0.5250	+0.1662	+90	+41
64 Arietis	5.7	2.41	12.9	24 21.5	2 4 9.0	+ 9 38.7	-0.6898	0.5333	0.1445	+ 5	-65
7 Tauri	6.0	2.37	12.8	24 7.1	8 51.4	- 9 48.2	+0.2308	0.5374	0.1352	+57	-15
11 Tauri	6.7	2.36	12.3	24 59.8	11 44.7	- 7 0.8	-0.3447	0.5398	0.1292	+25	-45
g Pleiadum	6.3	2.33	12.5	23 57.9	13 36.1	- 5 13.1	+1.0140	0.5409	0.1258	+90	+29
17 Tauri	4.3	+2.33	+12.6	+23 47.4	13 38.2	- 5 11.1	+1.2070	0.5409	+0.1258	+90	+46
19 Tauri	5.0	2.33	12.5	24 8.6	13 46.9	- 5 2.6	+0.8412	0.5411	0.1247	+90	+18
20 Tauri	5.0	2.33	12.5	24 2.7	14 3.8	- 4 46.3	+0.9845	0.5414	0.1244	+90	+28
21 Tauri	7.0	2.33	12.4	24 14.0	14 5.9	- 4 44.3	+0.7830	0.5414	0.1242	+90	+15
22 Tauri	7.0	2.33	12.4	24 12.4	14 9.8	- 4 40.6	+0.8212	0.5414	0.1242	+90	+17
B. A. C. 1171	7.8	+2.32	+12.3	+24 1.7	15 16.6	- 3 36.0	+1.1500	0.5420	+0.1217	+90	+41
B. A. C. 1192	6.0	2.32	11.9	25 16.1	16 4.3	- 2 50.0	-0.1014	0.5429	0.1200	+38	-31
ρ Tauri	6.0	2.27	11.3	26 12.8	8 12.9	+ 5 59.7	-0.1227	0.5495	0.0993	+37	-30
φ Tauri	5.3	2.25	10.4	27 6.3	5 22.5	+10 0.5	-0.6913	0.5527	0.0897	+ 4	-62
χ Tauri	5.7	2.22	10.9	25 23.2	6 22.7	+10 58.5	+1.2540	0.5534	0.0871	+90	+56
W. iv, 1421	6.0	+2.11	+ 8.6	+27 54.1	4 2 24.2	+ 6 16.4	-0.2172	0.5656	+0.0354	+31	-29
22 Aurigæ	7.0	2.09	7.8	28 50.6	8 3.6	+11 43.1	-1.0650	0.5685	0.0199	-24	-61
β Tauri	1.8	2.07	7.7	28 31.3	9 16.1	-11 7.1	-0.6987	0.5690	+0.0164	+ 3	-59
136 Tauri	5.3	1.99	7.0	27 35.3	20 22.6	- 0 25.8	+0.2995	0.5731	-0.0153	+62	0
49 Aurigæ	5.7	1.89	5.2	28 6.3	5 13 20.2	- 8 7.2	-0.9143	0.5765	0.0642	-11	-62
25 Geminorum	6.5	+1.88	+ 4.8	+28 17.6	15 49.0	- 5 44.2	-1.2770	0.5765	-0.0714	-55	-62
39 Geminorum	6.3	1.81	4.5	26 13.1	22 54.8	+ 1 5.2	+0.3087	0.5763	0.0918	+63	- 6
40 Geminorum	6.3	1.81	4.5	26 3.4	23 11.0	+ 1 20.8	+0.4527	0.5762	0.0926	+74	+ 1
W. vi, 1656	8.2	1.81	4.1	26 59.5	6 0 55.5	+ 3 1.3	-0.6842	0.5762	0.0975	+ 5	-62
47 Geminorum	6.0	1.80	3.7	27 1.7	3 59.5	+ 5 58.2	-1.0350	0.5758	0.1062	-19	-63
49 Geminorum	7.2	+1.78	+ 3.8	+25 55.4	4 35.8	+ 6 33.1	+0.0484	0.5758	-0.1076	+46	-21

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
B. A. C. 2363	7.3	+1.77	+ 4.0	+24 53.5	6 5 16.2	+ 7 11.9	+1.0610	0.5755	-0.1097	+90	+35
52 Geminorum	6.3	1.76	3.9	25 4.0	5 22.2	+ 7 17.7	+0.8502	0.5755	0.1099	+90	+21
A Geminorum	5.7	1.73	3.5	25 15.1	8 56.2	+10 43.5	+0.2500	0.5750	0.1199	+59	-13
κ Geminorum	3.7	1.70	2.7	24 38.9	17 30.3	- 5 2.1	-0.2540	0.5732	0.1428	+30	-40
82 Geminorum	6.5	1.68	2.7	23 24.0	19 12.7	- 3 23.5	+0.7838	0.5725	0.1472	+90	+14
7 Cancri	6.3	+1.65	+ 2.0	+22 21.7	7 1 31.7	+ 2 41.2	+0.8662	0.5705	-0.1631	+90	+17
μ^1 Cancri	6.3	1.65	1.9	22 55.9	2 32.3	+ 3 39.5	+0.1161	0.5702	0.1656	+50	-23
B. A. C. 2703	7.5	1.65	1.9	22 45.4	2 39.5	+ 3 40.4	+0.2749	0.5699	0.1660	+60	-15
μ^2 Cancri	5.7	1.64	+ 1.9	21 53.0	3 9.6	+ 4 15.4	+1.0860	0.5699	0.1671	+90	+32
NEW MOON.											
α Leonis	1.3	+1.46	- 3.8	+12 28.4	9 7 19.0	+ 6 32.2	-0.9005	0.5479	-0.2622	- 4	-78
44 Leonis	6.0	1.46	4.8	9 18.7	14 56.8	-10 5.7	+0.2352	0.5451	0.2700	+57	-29
45 Leonis	6.0	1.48	4.8	10 17.4	16 1.6	- 9 3.2	-1.0390	0.5446	0.2711	-13	-80
ρ Leonis	4.0	1.48	5.1	9 50.4	18 22.6	- 6 46.9	-1.2250	0.5441	0.2731	-27	-80
48 Leonis	5.5	+1.45	- 5.4	+ 7 29.2	19 18.7	- 5 52.7	+0.8716	0.5438	-0.2738	+90	+ 4
49 Leonis	6.0	1.47	5.2	9 11.2	19 23.8	- 5 47.8	-0.8515	0.5437	0.2739	- 1	-81
37 Sextantis	6.3	1.47	6.0	6 55.2	10 0 27.6	- 0 54.3	+0.0166	0.5423	0.2774	+45	-42
38 Sextantis	7.8	1.48	6.1	6 53.6	1 1.2	- 0 21.8	-0.1115	0.5419	0.2780	+38	-49
56 Leonis	6.6	1.49	6.5	6 44.3	5 1.3	+ 3 30.2	-1.0750	0.5411	0.2802	-15	-83
δ Leonis	5.3	+1.47	- 7.1	+ 4 10.4	7 6.6	+ 5 31.3	+0.8982	0.5406	-0.2814	+79	+ 4
75 Leonis	5.7	1.49	8.2	2 34.8	14 49.4	-11 1.4	+0.3059	0.5396	0.2843	+61	-28
76 Leonis	6.3	1.49	8.2	2 13.1	15 34.9	-10 17.4	+0.4487	0.5394	0.2844	+70	+21
79 Leonis	6.0	1.50	8.4	+ 1 58.6	17 56.9	- 8 0.2	+0.0183	0.5391	0.2848	+45	43
ν Leonis	4.4	1.51	9.5	- 0 15.2	23 55.4	- 2 13.6	+0.5383	0.5386	0.2854	+76	-16
χ Virginis	5.2	+1.68	-13.5	- 7 25.6	12 4 37.2	+ 1 30.7	-0.3943	0.5399	-0.2738	+22	-66
28 Virginis	7.0	1.70	13.5	6 55.9	5 51.4	+ 2 42.4	-1.2260	0.5401	0.2729	-28	-90
ψ Virginis	5.2	1.74	14.3	8 58.7	11 28.9	+ 8 0.6	-0.7082	0.5431	0.2686	- 5	-90
ζ Virginis	5.9	1.80	14.8	10 11.3	17 35.2	- 9 57.7	-1.1210	0.5453	0.2623	-21	-90
ι Virginis	5.7	1.90	15.5	12 10.3	13 1 59.5	- 1 50.9	-1.2970	0.5484	0.2522	-39	-90
75 Virginis	6.0	+1.92	-16.4	-14 50.0	4 41.5	+ 0 45.5	+0.6977	0.5495	-0.2485	+75	- 7
83 Virginis	6.0	2.00	17.1	15 39.7	9 47.9	+ 5 41.1	+0.2799	0.5517	0.2409	+52	-29
85 Virginis	6.5	2.01	17.0	15 15.0	10 16.9	+ 6 9.1	-0.2446	0.5518	0.2402	+25	-58
B. A. C. 4722	5.8	2.21	17.7	17 43.2	23 9.9	- 5 21.5	-0.5887	0.5585	0.2182	+ 5	-83
B. A. C. 4923	7.3	2.58	19.4	20 57.0	14 16 46.2	+11 32.0	-0.9851	0.5671	0.1814	-22	-90
42 Libræ	5.7	+2.90	-17.9	-23 29.1	15 10 15.8	+ 4 21.8	-1.2130	0.5751	-0.1383	-46	-90
B. A. C. 5197	6.0	2.95	18.0	24 23.7	12 28.7	+ 6 29.5	-0.5832	0.5762	0.1321	- 4	-85
δ Scorpii	5.3	3.01	18.1	25 26.4	14 31.6	+ 8 27.7	+0.2201	0.5771	0.1266	+37	-31
A ² Scorpii	5.2	3.02	17.8	25 1.3	15 35.2	+ 9 28.8	-0.3414	0.5773	0.1238	+ 8	-65
B. A. C. 5253	5.8	3.01	17.5	24 13.7	15 42.9	+ 9 36.2	-1.1690	0.5773	0.1234	-43	-90
B. A. C. 5255	6.0	+3.03	-17.8	-25 6.4	15 49.5	+ 9 42.5	-0.2834	0.5775	-0.1231	+11	-61
3 Scorpii	6.7	3.03	17.8	24 56.4	16 0.5	+ 9 53.1	-0.4764	0.5775	0.1226	+ 1	-75
4 Scorpii	6.3	2.05	18.1	25 57.9	16 19.7	+10 11.6	+0.5344	0.5776	0.1217	+54	-14
B. A. C. 5314	5.7	2.10	17.5	25 34.8	19 27.9	-10 47.6	-0.2291	0.5785	0.1130	+13	-58
B. A. C. 5347	6.0	3.15	17.3	26 3.1	21 21.0	- 8 58.9	+0.0479	0.5793	0.1077	+26	-41
σ Scorpii	3.4	+3.24	-16.5	-25 20.9	16 2 32.7	- 3 59.5	-1.1980	0.5806	-0.0931	-49	-90
τ Scorpii	1.2	3.32	16.3	26 12.4	5 46.6	- 0 53.2	-0.6006	0.5811	0.0836	- 9	88
7 Scorpii	3.2	3.40	16.5	28 0.3	8 17.8	+ 1 32.1	+1.0520	0.5817	0.0761	+62	+22
B. A. C. 5800	7.5	3.68	13.4	26 51.8	23 24.1	- 7 57.6	-0.9404	0.5826	0.0309	-34	-90
43 Ophiuchi	5.8	3.79	13.0	28 2.7	17 2 58.1	- 4 31.9	+0.1955	0.5825	-0.0201	+26	-32
3 Sagittarii	4.6	+3.95	-10.7	27 47.7	12 31.7	+ 4 39.1	-0.1199	0.5809	+0.0087	+ 8	-51
B. A. C. 6127	5.1	4.10	8.9	28 28.2	20 41.0	-11 30.8	+0.7560	0.5786	0.0327	+62	0
B. A. C. 6194	5.1	4.12	7.6	27 4.9	18 0 42.7	- 7 38.5	-0.5430	0.5769	0.0445	-10	-82
ϕ Sagittarii	3.7	4.27	4.7	27 6.0	11 55.4	+ 3 8.4	+0.1543	0.5718	0.0757	+29	-35
σ Sagittarii	2.3	4.29	3.5	26 25.6	15 54.1	+ 6 58.1	-0.2318	0.5693	0.0868	+10	58
ψ Sagittarii	5.4	+4.34	- 1.1	-25 26.1	19 0 23.7	- 8 51.2	-0.4476	0.5643	+0.1087	+ 1	-73

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
χ^1 Sagittarii	5.4	+4.35	+ 0.1	-24 42.6	19 4 32.5	- 4 51.5	-0.7447	0.5613	+0.1191	-14	-90
χ^2 Sagittarii	6.3	4.35	0.1	24 37.0	4 35.3	- 4 48.8	-0.8381	0.5611	0.1191	-19	-90
λ^1 Sagittarii	5-7	4.40	1.2	24 56.8	9 9.3	- 0 24.7	+0.0813	0.5581	0.1299	+30	-39
λ^2 Sagittarii	4.7	4.41	1.5	25 6.8	9 26.5	- 0 8.1	+0.2953	0.5578	0.1307	+42	-27
53 Sagittarii	6.7	4.37	2.0	23 39.0	10 49.4	+ 1 11.8	-1.0580	0.5569	0.1340	-32	-90
B. A. C. 6727	6.2	+4.37	+ 2.1	-23 40.0	10 57.0	+ 1 19.1	-1.0390	0.5568	+0.1343	-31	-90
4 Capricorni	6.1	4.42	6.5	22 7.8	20 3 49.5	- 6 23.7	-0.1068	0.5438	0.1697	+25	-50
20 Capricorni	6.3	4.38	11.4	19 26.1	23 21.9	-11 29.9	+0.6668	0.5286	0.2031	+70	- 8
6 Capricorni	4.1	4.35	12.3	17 38.6	21 2 27.8	- 8 29.8	-0.6265	0.5266	0.2077	+ 4	-86
31 Capricorni	6.7	4.36	13.4	17 53.7	8 30.5	- 2 38.4	+0.9245	0.5222	0.2158	+72	+ 7
1 Capricorni	4.4	+4.34	+13.6	-17 16.4	10 29.7	- 0 43.0	+0.6874	0.5206	+0.2183	+72	- 7
42 Capricorni	5.6	4.25	15.8	14 30.4	20 16.7	+ 8 46.2	-0.1138	0.5140	0.2295	+33	-50
44 Capricorni	6.1	4.26	16.2	14 52.2	21 2.8	+ 9 31.0	+0.4569	0.5137	0.2303	+64	-20
45 Capricorni	6.3	4.27	16.2	15 13.3	21 31.6	+ 9 58.9	+0.9499	0.5131	0.2306	+75	+ 8
μ Capricorni	5.2	4.25	17.1	14 2.2	22 2 18.3	- 9 22.9	+0.7778	0.5101	0.2354	+71	- 2
ϵ Aquarii	6.8	+4.17	+18.6	-11 19.6	11 23.1	- 0 34.0	+0.0073	0.5051	+0.2430	+41	-43
ϵ Aquarii	5.6	4.18	18.6	12 4.3	11 25.7	- 0 31.5	+0.8202	0.5051	0.2432	+78	0
B. A. C. 7740	7.0	4.18	18.8	11 34.4	12 19.0	+ 0 20.3	+0.5027	0.5047	0.2435	+69	-18
B. A. C. 7774	6.7	4.12	19.2	9 33.2	14 46.7	+ 2 43.7	-1.0960	0.5030	0.2452	-19	-90
67 Aquarii	6.4	4.04	21.1	7 30.1	23 5 2.0	- 7 25.1	+0.2189	0.4966	0.2531	+54	-32
B. A. C. 7986	5.9	+4.00	+21.8	- 5 32.1	11 36.8	- 1 1.2	-0.2613	0.4941	+0.2557	+30	-58
B. A. C. 7993	6.6	3.99	21.9	5 21.6	12 46.9	+ 0 7.0	-0.1535	0.4937	0.2501	+35	-52
B. A. C. 8017	6.1	3.98	22.1	5 15.9	15 7.8	+ 2 24.1	+0.3402	0.4929	0.2507	+62	-26
B. A. C. 8094	5.4	3.94	22.9	4 3.3	22 58.1	+10 1.6	+1.0350	0.4907	0.2581	+86	+12
11 Piscium	6.4	3.89	23.4	2 21.4	24 6 45.9	- 6 23.2	+1.1840	0.4891	0.2588	+88	+23
12 Piscium	6.8	+3.88	+23.3	- 1 36.1	6 48.1	- 6 21.1	+0.3616	0.4891	+0.2588	+64	-25
13 Piscium	6.4	3.88	23.5	1 39.2	8 10.8	- 5 0.6	+0.7766	0.4889	0.2588	+78	- 4
14 Piscium	5.9	3.87	23.6	- 1 48.9	9 24.5	- 3 48.9	+1.2730	0.4889	0.2588	+88	+30
15 Piscium	6.6	3.84	23.4	+ 0 44.7	10 10.3	- 3 4.3	-1.3520	0.4885	0.2588	-39	-89
λ Piscium	4.5	3.81	23.5	1 12.9	13 53.2	+ 0 33.7	-0.9097	0.4878	0.2583	- 4	-89
21 Piscium	5.8	+3.81	+24.0	+ 0 30.3	18 4.0	+ 4 37.8	+0.9528	0.4874	+0.2578	+90	+ 7
22 Piscium	5.0	3.79	23.8	2 21.5	19 29.1	+ 6 0.6	-0.7268	0.4875	0.2576	+ 6	-85
25 Piscium	6.4	3.79	23.9	1 31.1	20 7.0	+ 6 37.4	+0.3625	0.4876	0.2576	+64	-25
45 Piscium	6.9	3.69	23.8	7 7.4	25 14 33.0	+ 0 32.9	-1.1370	0.4877	0.2518	-19	-83
51 Piscium	5.8	3.67	24.0	6 23.3	18 19.3	+ 4 13.1	+0.6241	0.4883	0.2498	+84	-11
75 Piscium	6.0	+3.58	+23.3	+12 24.3	26 13 20.0	- 1 16.3	-1.4060	0.4925	+0.2376	-55	-78
7 Piscium	3.7	3.52	22.6	14 49.0	27 2 54.8	+11 55.1	-0.9319	0.4973	0.2256	- 7	-75
101 Piscium	6.3	3.52	22.6	14 8.2	5 13.9	- 9 49.7	+0.3421	0.4984	0.2234	+63	-21
104 Piscium	7.5	3.51	22.7	13 45.9	7 6.1	- 8 0.7	+1.1720	0.4991	0.2213	+90	+28
105 Piscium	6.3	3.51	22.1	15 53.1	7 18.4	- 7 48.8	-1.1350	0.4995	0.2212	-21	-74
4 Arietis	5.7	+3.49	+21.9	+16 26.7	11 50.1	- 3 24.7	-0.7654	0.5016	+0.2163	+ 3	-70
B. A. C. 549	8.2	3.49	21.9	16 30.5	11 55.6	- 3 19.4	-0.8172	0.5016	0.2161	0	-73
1 Arietis	5.7	3.47	21.5	17 19.0	16 40.3	+ 1 17.0	-0.7003	0.5036	0.2107	+ 6	-73
15 Arietis	5.7	3.46	20.7	19 1.0	23 34.3	+ 7 59.0	-1.1580	0.5075	0.2020	-25	-71
B. A. C. 686	7.2	3.44	20.7	19 7.9	28 1 14.8	+ 9 36.8	-0.9508	0.5084	0.1997	- 9	-71
6 Arietis	5.7	+3.44	+20.5	+19 25.5	3 26.3	+11 44.3	-0.8379	0.5095	+0.1969	- 2	-71
23 Arietis	7.5	3.43	20.4	19 13.0	3 57.9	-11 45.1	-0.5039	0.5099	0.1962	+17	-62
26 Arietis	6.0	3.40	20.2	19 23.9	9 48.5	- 6 5.0	+0.4149	0.5131	0.1877	+69	-13
1 Arietis	5.7	3.41	19.1	21 31.0	13 53.8	- 2 7.1	-1.1730	0.5157	0.1817	-28	-68
μ Arietis	6.0	3.38	19.6	19 34.4	15 41.8	- 0 22.4	+1.3020	0.5168	0.1788	+90	+50
B. A. C. 920	7.0	+3.35	+18.6	+21 12.5	23 49.2	+ 7 29.9	+0.8935	0.5220	+0.1655	+90	+16
1 Arietis	4.6	3.35	18.7	20 55.8	23 59.2	+ 7 39.5	+1.2270	0.5222	0.1650	+90	+43
64 Arietis	5.7	3.31	16.5	24 21.2	20 11 59.2	- 4 43.4	-0.6961	0.5302	0.1433	+ 5	-65
7 Tauri	6.0	3.28	16.2	24 7.2	16 45.6	- 0 6.3	+0.2287	0.5333	0.1339	+57	-15
11 Tauri	6.7	3.28	15.5	24 59.9	19 41.4	+ 2 43.6	-0.3510	0.5355	0.1279	+ 6	-45
g Pleiadum	6.3	+3.26	+15.7	+23 58.0	21 34.6	+ 4 33.1	+1.0200	0.5365	+0.1240	+90	+30

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
17 Tauri	4.3	+3.26	+15.8	+23 47.5	29 21 36.7	+ 4 35.2	+1.2140	0.5365	+0.1240	+90	+47
18 Tauri	6.3	3.26	15.5	24 31.1	21 43.9	+ 4 42.1	+0.4328	0.5367	0.1236	+72	-13
19 Tauri	5.0	3.25	15.7	24 8.7	21 45.6	+ 4 43.8	+0.8474	0.5367	0.1236	+90	+19
20 Tauri	5.0	3.25	15.7	24 2.8	22 2.9	+ 5 0.5	+0.9879	0.5370	0.1231	+90	+28
21 Tauri	7.0	3.25	15.6	24 14.1	22 4.9	+ 5 2.4	+0.7870	0.5370	0.1231	+90	+15
22 Tauri	7.0	+3.25	+15.6	+24 12.5	22 8.8	+ 5 6.1	+0.8231	0.5370	+0.1228	+90	+17
B. A. C. 1171	7.8	3.24	15.5	24 1.8	23 16.7	+ 6 11.8	+1.1550	0.5375	0.1205	+90	+41
B. A. C. 1192	6.0	3.26	15.0	25 16.2	30 0 5.2	+ 6 58.6	-0.1040	0.5386	0.1188	+38	-31
γ Tauri	6.0	3.20	13.7	26 12.8	9 23.1	- 8 2.4	-0.1237	0.5444	0.0984	+37	-30
ϕ Tauri	5.3	3.19	12.9	27 6.3	13 37.3	- 3 57.0	-0.7004	0.5470	0.0884	+ 4	-62
χ Tauri	5.7	+3.15	+13.3	+25 23.2	14 38.6	- 2 57.8	+1.2590	0.5476	+0.0860	+90	+57
W. iv, 1421	6.0	3.04	9.7	27 54.2	31 11 4.0	- 7 15.9	-0.2281	0.5589	0.0348	+32	-34
22 Aurigæ	7.0	3.01	8.6	28 50.7	16 50.7	- 1 41.8	-1.0830	0.5613	0.0197	25	-61
β Tauri	1.8	+2.99	+ 8.4	+28 31.3	18 4.7	- 0 30.5	-0.7120	0.5618	+0.0161	+ 2	-60

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136 Tauri	5.3	+2.86	+7.2	+27 35.3	1 5 25.6	+10 25.1	+0.2941	0.5661	-0.0151	+62	0
49 Aurigæ	5.7	2.72	4.7	28 6.3	22 44.6	+ 3 5.0	-0.9319	0.5696	0.0637	-12	-62
37 Geminorum	6.3	2.57	3.9	25 30.4	2 7 5.1	+11 6.8	+1.1730	0.5698	0.0867	+90	+47
39 Geminorum	6.3	+2.57	+3.5	+26 13.1	8 30.6	-11 31.0	+0.2987	0.5698	-0.0907	+62	- 7
40 Geminorum	6.3	2.57	3.5	26 3.4	8 47.1	-11 15.1	+0.4437	0.5698	0.0915	+73	0
W. vi, 1656	8.2	2.57	2.9	26 39.4	10 33.6	- 9 32.7	-0.6997	0.5699	0.0965	+ 4	-62
47 Geminorum	6.0	2.54	2.4	27 1.6	13 40.9	- 6 32.4	-1.0500	0.5697	0.1050	-21	-63
49 Geminorum	7.2	2.52	2.6	25 55.3	14 17.7	- 5 57.0	+0.0400	0.5694	0.1067	+46	-22
B. A. C. 2363	7.3	+2.49	+2.8	+24 53.4	14 59.0	- 5 17.2	+1.0420	0.5694	-0.1085	+90	+34
52 Geminorum	6.3	2.49	2.8	25 3.9	15 5.0	- 5 11.4	+0.8472	0.5694	0.1087	+90	+21
A Geminorum	5.7	2.46	2.1	25 15.0	18 42.8	- 1 41.8	+0.2412	0.5692	0.1185	+58	-13
κ Geminorum	3.7	2.36	1.1	24 38.8	3 25.1	+ 6 40.8	-0.2658	0.5680	0.1414	+29	-41
82 Geminorum	6.3	2.33	1.1	23 23.9	5 9.0	+ 8 20.8	+0.7789	0.5674	0.1457	+90	+13
7 Cancri	6.3	+2.25	+0.4	+22 21.7	11 33.1	- 9 29.4	+0.8578	0.5658	-0.1618	+90	+16
μ^1 Cancri	6.3	2.25	0.1	22 55.9	12 34.4	- 8 30.3	+0.1063	0.5657	0.1643	+50	-24
B. A. C. 2703	7.5	2.24	0.1	22 45.4	12 41.7	- 8 23.3	+0.2658	0.5657	0.1646	+59	-16
μ^2 Cancri	5.7	2.23	+0.2	21 53.0	13 12.1	- 7 54.0	+1.0800	0.5656	0.1658	+90	+31
B. A. C. 2788	6.0	2.18	-0.4	21 4.5	18 30.3	- 2 47.7	+0.9922	0.5643	0.1783	+90	+23
η Cancri	5.4	+2.12	-1.1	+20 47.7	23 44.7	+ 2 15.2	+0.3319	0.5624	-0.1903	+64	-15
35 Cancri	6.3	2.10	1.0	19 56.8	4 0 52.0	+ 3 20.1	+0.9634	0.5624	0.1928	+90	+20
B. A. C. 2907	8.8	2.08	1.2	19 57.4	2 29.8	+ 4 54.3	+0.6339	0.5616	0.1963	+88	0
38 Cancri	7.0	2.08	1.3	20 8.7	2 43.8	+ 5 7.8	+0.3957	0.5616	0.1969	+68	-13
B. A. C. 2914	7.2	2.07	1.2	29 54.4	2 47.5	+ 5 11.4	+0.6269	0.5616	0.1969	+87	- 1
39 Cancri	7.0	+2.08	-1.3	+20 22.5	2 53.8	+ 5 17.5	+0.1291	0.5616	-0.1972	+51	-26
40 Cancri	7.3	2.08	1.3	20 20.3	2 55.9	+ 5 19.5	+0.1597	0.5616	0.1972	+53	-25
B. A. C. 2919	7.3	2.07	1.3	20 2.2	3 0.7	+ 5 24.1	+0.4519	0.5616	0.1974	+72	-10
ϵ Cancri	7.2	2.07	1.2	19 54.7	3 2.9	+ 5 26.2	+0.5709	0.5616	0.1975	+82	- 4
ϵ Cancri	7.1	2.07	1.3	20 5.3	3 9.7	+ 5 32.7	+0.3685	0.5615	0.1977	+66	-14
B. A. C. 2925	7.7	+2.07	-1.3	+19 56.9	3 15.4	+ 5 38.2	+0.4925	0.5615	-0.1980	+75	- 8
B. A. C. 2931	7.5	2.07	1.4	20 14.7	3 38.1	+ 6 0.1	+0.1154	0.5614	0.1988	+50	-27
68 Cancri	7.5	1.97	2.0	17 29.3	12 11.8	- 9 44.8	+1.1330	0.5586	0.2164	+90	+29
71 Cancri	8.0	1.95	2.3	17 48.3	13 55.8	- 8 4.5	+0.4343	0.5581	0.2197	+70	-13
B. A. C. 3103	7.5	1.95	2.3	17 31.9	14 8.9	- 7 51.9	+0.6645	0.5578	0.2202	+90	- 1
78 Cancri	7.8	+1.95	-2.5	+17 53.4	15 20.8	- 6 42.5	+0.0354	0.5578	-0.2224	+46	-33
80 Cancri	6.8	1.95	2.8	18 28.2	16 35.9	- 5 30.2	-0.8305	0.5571	0.2247	- 2	-72
83 Cancri	5.7	1.93	3.2	18 8.7	19 39.5	- 2 33.4	-1.1960	0.5562	0.2302	-28	-72
7 Leonis	6.1	1.92	3.4	14 50.5	5 3 4.5	+ 4 36.0	+0.3785	0.5539	0.2427	+66	-28
11 Leonis	6.8	1.81	3.6	14 48.9	4 1.1	+ 5 30.6	+0.1724	0.5539	0.2442	+53	-29
ψ Leonis	6.0	+1.80	-3.8	+14 29.7	6 31.4	+ 7 55.6	-0.1220	0.5527	-0.2480	+37	-45

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
		α	δ	α	d h m	h m							
21 Leonis	6.8	+1.77	-4.1	+12 19.6	5 9 40.4	+10 58.0	+1.2620	0.5521	-0.2527	+90	+36		
23 Leonis	6.5	1.77	4.1	13 33.0	9 45.2	+11 2.6	+0.0167	0.5518	0.2528	+45	-38		
JUPITER				13 45.0	12 39.0	-10 9.7	-0.9217	0.5429	0.2538	-6	-76		
v Leonis	5.3	1.75	4.5	12 56.3	12 56.6	-9 52.7	-0.1849	0.5511	0.2571	+34	-49		
A Leonis	4.7	1.70	4.7	10 30.3	17 16.0	-5 42.4	+1.1190	0.5499	0.2627	+90	+22		
a Leonis	1.3	+1.71	-4.9	+12 28.4	17 27.9	-5 30.8	-0.8960	0.5499	-0.2628	-4	-78		
NEW MOON.													
χ Virginis	5.2	1.55	12.2	-7 25.6	8 13 16.9	+11 58.2	-0.3578	0.5508	0.2788	+24	-64		
28 Virginis	7.0	1.56	12.2	6 55.9	14 28.7	-10 52.5	-1.1800	0.5509	0.2777	-24	-90		
ψ Virginis	5.2	+1.57	-12.8	-8 58.7	19 55.7	-5 36.9	-0.6651	0.5527	-0.2730	+8	-88		
ξ Virginis	5.9	1.61	13.3	10 11.3	9 50.3	+0 5.2	-1.0700	0.5549	0.2667	-18	-90		
i Virginis	5.7	1.67	14.1	12 10.2	9 58.2	+7 55.6	-1.2400	0.5582	0.2563	-33	-90		
75 Virginis	6.0	1.69	14.7	14 49.9	12 34.9	+10 26.7	+0.7268	0.5594	0.2524	+75	-5		
83 Virginis	6.0	1.74	15.4	15 39.6	17 31.4	-8 47.6	+0.3169	0.5616	0.2449	+55	-27		
85 Virginis	6.5	+1.75	-15.2	-15 14.9	17 59.5	-8 20.5	-0.2046	0.5618	-0.2441	+27	-55		
B. A. C. 4722	5.8	1.90	15.9	17 43.2	10 6 27.7	+3 40.0	-0.6613	0.5676	0.2216	+1	90		
B. A. C. 4923	7.3	2.21	17.8	20 57.0	23 32.4	-3 54.2	-0.9162	0.5769	0.1840	-18	-90		
42 Libræ	5.7	2.47	16.6	23 29.1	11 16 34.9	-11 31.6	-1.1420	0.5822	0.1396	-39	-90		
B. A. C. 5197	6.0	2.52	16.7	24 23.7	18 44.6	-9 27.0	-0.5189	0.5829	0.1337	-1	-78		
b Scorpïi	5.3	+2.56	-16.9	-25 26.4	20 44.7	-7 31.7	+0.2749	0.5834	-0.1280	+40	-28		
A ^h Scorpïi	5.2	2.58	16.6	25 1.3	21 47.0	-6 31.9	-0.2783	0.5837	0.1250	+11	-61		
B. A. C. 5253	5.8	2.57	16.4	24 13.7	21 54.5	-6 24.7	-1.0970	0.5839	0.1247	-37	-90		
B. A. C. 5255	6.0	2.58	16.6	25 6.4	22 0.9	-6 18.6	-0.2211	0.5839	0.1244	+14	-57		
3 Scorpïi	6.7	2.58	16.6	24 56.4	22 11.6	-6 8.3	-0.4117	0.5839	0.1239	+4	-70		
4 Scorpïi	6.3	+2.60	-16.9	-25 57.9	22 30.5	-5 50.1	+0.5875	0.5839	-0.1229	+58	11		
π Scorpïi	3.4	2.62	16.7	25 49.2	23 49.0	-4 34.8	+0.2804	0.5842	0.1191	+39	-28		
B. A. C. 5314	5.7	2.65	16.4	25 34.8	12 1 34.6	-2 53.5	-0.1674	0.5851	0.1142	+15	54		
B. A. C. 5347	6.0	2.70	16.4	26 3.1	3 25.4	-1 7.0	+0.1049	0.5851	0.1086	+29	38		
σ Scorpïi	3.4	2.79	15.6	25 20.9	8 31.1	+3 46.4	-1.1270	0.5860	0.0937	-42	-90		
a Scorpïi	1.2	+2.87	-15.5	-26 12.4	11 41.5	+6 49.2	-0.5338	0.5862	-0.0842	-6	-81		
r Scorpïi	3.2	2.95	15.7	28 0.3	14 10.2	+9 11.9	+1.1020	0.5866	0.0766	+62	+26		
B. A. C. 5800	7.5	3.24	13.4	26 51.8	13 5 4.0	-0 30.3	-0.8720	0.5856	0.0311	-30	90		
38 Ophiuchi	6.7	3.26	12.7	26 31.1	6 24.1	+0 46.7	-1.2680	0.5853	0.0270	-62	90		
43 Ophiuchi	5.8	3.33	13.0	28 2.7	8 35.6	+2 52.9	+0.2546	0.5848	-0.0203	+29	-29		
3 Sagittarii	4.6	+3.52	-10.9	-27 47.7	18 4.6	+11 59.3	-0.0571	0.5821	+0.0086	+11	-47		
B. A. C. 6127	5.1	3.68	9.4	28 28.3	14 2 11.4	-4 13.0	+0.8145	0.5789	0.0326	+62	+4		
B. A. C. 6194	5.1	3.71	8.1	27 4.8	6 12.3	-0 21.5	-0.4803	0.5769	0.0444	+7	76		
ϕ Sagittarii	3.7	3.90	5.5	27 6.0	17 24.5	+10 24.9	+0.2117	0.5705	0.0758	+32	32		
σ Sagittarii	2.3	3.94	4.4	26 25.6	21 23.5	-9 45.1	-0.1719	0.5679	0.0863	+13	-54		
ψ Sagittarii	5.4	+4.02	-2.1	-25 26.2	15 5 54.7	-1 32.9	-0.3893	0.5619	+0.1081	+4	68		
χ^1 Sagittarii	5.4	4.05	0.9	24 42.6	10 4.7	+2 28.1	-0.6884	0.5589	0.1182	-10	-90		
χ^2 Sagittarii	6.3	4.05	0.8	24 37.0	10 7.7	+2 30.9	-0.7802	0.5586	0.1182	-16	90		
χ^3 Sagittarii	5.6	4.03	-0.6	24 10.0	10 11.2	+2 34.3	-1.2490	0.5586	0.1184	-52	90		
χ^4 Sagittarii	5.7	4.12	+0.2	24 56.8	14 43.1	+6 56.4	+0.1362	0.5551	0.1290	+33	-36		
A ^h Sagittarii	4.7	+4.12	+0.3	-25 6.8	15 0.4	+7 13.1	+0.3503	0.5551	+0.1297	+45	-24		
53 Sagittarii	6.7	4.09	1.0	23 39.9	16 23.8	+8 33.5	-1.0030	0.5539	0.1327	-28	-90		
B. A. C. 6727	6.2	4.09	1.1	23 40.0	16 31.5	+8 40.9	-0.9842	0.5537	0.1331	-27	90		
4 Capricorni	6.1	4.22	5.5	22 7.8	16 9 32.0	+1 6.3	-0.0553	0.5412	0.1683	-28	-47		
19 Capricorni	6.1	4.24	10.3	18 18.8	17 2 57.1	-6 2.8	-0.9632	0.5269	0.1976	-17	-90		
20 Capricorni	6.3	+4.26	+10.6	-19 26.1	5 15.8	-3 48.5	+0.7086	0.5252	+0.2011	+71	-5		
21 Capricorni	6.4	4.23	10.3	17 56.0	5 54.4	-3 11.1	-0.7754	0.5247	0.2022	-5	-90		
h Capricorni	4.1	4.24	11.6	17 38.6	8 23.8	-0 46.4	-0.5888	0.5229	0.2056	+5	-83		
31 Capricorni	6.7	4.28	12.7	17 53.7	14 30.3	+5 8.8	+0.9654	0.5184	0.2136	+72	+10		
i Capricorni	4.4	4.28	13.2	17 16.4	16 30.8	+7 5.5	+0.7224	0.5171	0.2162	+72	5		
42 Capricorni	5.6	+4.23	+15.6	-14 30.4	18 2 23.8	-7 19.2	0.0870	0.5107	+0.2272	+34	48		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>z'</i>	<i>y'</i>	N.	S.
		<i>Δα</i>	<i>Δδ</i>								
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d</i> <i>h</i> <i>m</i>	<i>h</i> <i>m</i>				<i>°</i>	<i>°</i>
44 Capricorni	6.1	+4.25	+15.8	-14 52.2	18 3 10.4	- 6 34.0	+0.4859	0.5104	+0.2280	+66	-18
45 Capricorni	6.3	4.26	15.8	15 13.3	3 39.5	- 6 5.7	+0.9788	0.5100	0.2287	+75	+10
μ Capricorni	5.2	4.26	16.9	14 2.2	8 29.1	- 1 24.6	+0.8044	0.5076	0.2333	+76	- 1
ε Aquarii	6.8	4.21	18.8	11 19.6	17 38.8	+ 7 29.2	+0.0218	0.5024	0.2408	+41	-42
ε Aquarii	5.6	4.23	18.7	12 4.3	17 41.5	+ 7 31.8	+0.8467	0.5021	0.2408	+78	+ 1
B. A. C. 7740	7.0	+4.23	+18.9	-11 34.4	18 35.2	+ 8 24.1	+0.5190	0.5018	+0.2415	+70	-17
B. A. C. 7774	6.7	4.19	19.5	9 33.2	21 4.3	+10 48.9	-1.0860	0.5007	0.2433	-19	-90
67 Aquarii	6.4	4.17	22.0	7 30.0	19 11 26.3	+ 0 46.9	+0.2196	0.4950	0.2514	+54	-32
B. A. C. 7986	5.9	4.15	23.0	5 32.1	18 3.7	+ 7 13.3	-0.2656	0.4626	0.2540	+29	-58
B. A. C. 7993	6.6	4.14	23.2	5 21.6	19 14.2	+ 8 21.9	-0.1595	0.4925	0.2545	+35	-52
B. A. C. 8017	6.1	+4.14	+23.4	- 5 15.9	21 35.8	+10 39.6	+0.3375	0.4917	+0.2552	+62	-26
B. A. C. 8094	5.4	4.14	24.3	4 3.3	5 28.4	- 5 40.6	+1.0220	0.4900	0.2569	+86	+11
11 Piscium	6.4	4.12	25.1	2 21.4	13 18.1	+ 1 56.5	+1.1630	0.4887	0.2576	+88	+21
12 Piscium	6.8	4.12	25.2	1 36.1	13 20.2	+ 1 58.5	+0.3386	0.4885	0.2576	+63	-26
13 Piscium	6.4	4.12	25.3	1 39.2	14 43.2	+ 3 19.3	+0.7530	0.4884	0.2576	+82	- 5
14 Piscium	5.9	+4.13	+25.4	- 1 48.9	15 57.2	+ 4 31.3	+1.2490	0.4883	+0.2576	+88	+28
15 Piscium	6.6	4.09	25.6	+ 0 44.7	16 43.1	+ 5 15.9	-1.3810	0.4883	0.2576	-44	-89
λ Piscium	4.5	4.08	25.8	1 12.9	20 26.7	+ 8 53.7	-0.9417	0.4878	0.2574	- 6	89
21 Piscium	5.8	4.09	26.1	0 30.3	21 0 38.0	-11 1.7	+0.9219	0.4877	0.2570	+90	+ 5
22 Piscium	5.0	4.08	26.3	2 21.5	2 3.3	- 9 38.7	-0.7654	0.4877	0.2567	+ 4	-80
25 Piscium	6.4	+4.08	+26.3	+ 1 31.7	2 41.3	- 9 1.8	+0.3283	0.4877	+0.2567	+62	-26
45 Piscium	6.9	4.06	27.1	7 7.4	21 8.0	+ 8 55.5	-1.1910	0.4890	0.2513	-24	-83
51 Piscium	5.8	4.06	27.3	6 23.3	22 0 54.3	-11 24.4	+0.5679	0.4895	0.2494	+79	-14
γ Piscium	3.7	4.06	26.6	14 49.0	23 9 27.8	- 3 44.3	-1.0230	0.4991	0.2255	-13	-75
101 Piscium	6.3	4.06	26.4	14 8.2	11 46.9	- 1 29.2	+0.2539	0.5000	0.2231	+58	-25
104 Piscium	7.5	+4.07	+26.4	+13 45.9	13 38.9	+ 0 19.6	+1.0780	0.5007	+0.2213	+90	+21
105 Piscium	6.3	4.07	26.1	15 53.1	13 51.3	+ 0 31.7	-1.2300	0.5009	0.2211	-30	-74
4 Arietis	5.7	4.07	25.8	16 26.7	18 22.8	+ 4 55.5	-0.8634	0.5029	0.2160	- 3	-74
B. A. C. 549	8.2	4.07	25.8	16 30.5	18 28.3	+ 5 0.8	-0.9154	0.5030	0.2159	- 6	-73
ι Arietis	5.7	4.08	25.4	17 19.0	23 12.8	+ 9 37.1	-0.8002	0.5052	0.2104	0	-73
15 Arietis	5.7	+4.09	+24.8	+19 1.0	24 6 7.1	- 7 40.7	-1.2670	0.5087	+0.2017	-36	-71
B. A. C. 686	7.2	4.09	24.6	19 8.0	7 47.7	- 6 3.0	-1.0590	0.5095	0.1995	-17	-71
θ Arietis	5.7	4.09	24.4	19 25.6	9 59.3	- 3 55.3	-0.9515	0.5106	0.1964	-10	-71
23 Arietis	7.5	4.08	24.4	19 13.1	10 30.9	- 3 24.7	-0.6165	0.5111	0.1956	+11	-68
26 Arietis	6.0	4.08	23.9	19 24.0	16 22.1	+ 2 16.1	+0.3035	0.5144	0.1875	+61	-18
ν Arietis	5.7	+4.11	+23.1	+21 31.1	20 28.0	+ 6 14.6	-1.2920	0.5164	+0.1810	-42	-68
μ Arietis	6.0	4.08	23.3	19 34.5	22 16.3	+ 7 59.6	+1.1870	0.5176	0.1782	+90	+37
B. A. C. 920	7.0	4.08	22.2	21 12.6	25 6 25.6	- 8 6.3	+0.7738	0.5225	0.1647	+90	+10
ε Arietis	4.6	4.08	22.2	20 55.9	6 35.7	- 7 56.4	+1.1100	0.5225	0.1645	+90	+32
64 Arietis	5.7	4.11	19.9	24 21.6	18 40.2	+ 3 45.2	-0.8290	0.5295	0.1424	- 4	-66
7 Tauri	6.0	+4.09	+19.4	+24 7.2	23 28.9	+ 8 24.6	+0.0994	0.5326	+0.1330	+49	-22
11 Tauri	6.7	4.10	18.6	24 59.9	26 2.3	+11 16.1	-0.4837	0.5339	0.1271	+17	-53
γ Pleiadum	6.3	4.07	18.7	23 58.0	4 20.5	-10 53.4	+0.9913	0.5351	0.1231	+90	-22
17 Tauri	4.3	4.07	18.7	23 47.5	4 22.7	-10 51.3	+1.0900	0.5351	0.1231	+90	+35
19 Tauri	5.0	4.07	18.6	24 8.7	4 31.7	-10 42.6	+0.7185	0.5353	0.1227	+90	+11
20 Tauri	5.0	+4.07	+18.6	+24 2.8	4 49.0	-10 25.8	+0.8618	0.5355	+0.1222	+90	+20
21 Tauri	7.0	4.08	18.5	24 14.1	4 51.1	-10 23.8	+0.6577	0.5357	0.1222	+90	+ 8
22 Tauri	7.0	4.08	18.5	24 15.5	4 55.1	-10 20.0	+0.6965	0.5357	0.1220	+90	+12
24 Tauri	8.0	4.07	18.6	23 47.9	5 31.9	- 9 44.4	+1.2220	0.5359	0.1207	+90	+48
γ Tauri	3.1	4.07	18.6	23 47.3	5 35.6	- 9 40.8	+1.2400	0.5359	0.1205	+90	+50
B. A. C. 1171	7.8	+4.07	+18.4	+24 1.8	6 3.7	- 9 13.6	+1.0350	0.5362	+0.1196	+90	+31
28 Tauri	6.2	4.06	18.4	23 49.4	6 23.1	- 8 54.9	+1.2950	0.5365	0.1187	+90	+60
B. A. C. 1192	6.0	4.09	18.2	25 16.2	6 52.7	- 8 26.3	-0.2406	0.5367	0.1180	+30	-38
δ Tauri	6.0	4.07	16.2	26 12.9	16 17.2	+ 0 37.4	-0.2674	0.5418	0.0972	+28	-37
φ Tauri	5.3	4.08	15.2	27 6.4	20 34.9	+ 4 48.3	-0.8468	0.5442	0.0876	- 6	-63
χ Tauri	5.7	+4.03	+15.6	+25 23.3	21 37.0	+ 5 48.3	+1.1280	0.5449	+0.0850	+90	+43

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
W. iv, 1421	6.0	+3.96	+11.0	+27 54.2	27 18 23.7	+ 1 51.6	-0.3772	0.5538	+0.0343	+22	-37
22 Aurigæ	7.0	3.95	9.6	28 50.7	28 0 17.8	+ 7 32.9	-1.2390	0.5559	0.0190	-46	-61
β Tauri	1.8	3.93	9.3	28 31.4	1 33.5	+ 8 46.0	-0.8698	0.5563	+0.0157	- 8	-61
136 Tauri	5.3	3.80	7.4	27 35.4	13 10.3	- 4 2.4	+0.1492	0.5590	-0.0149	+53	- 8
49 Aurigæ	5.7	3.64	3.5	28 6.3	29 6 57.1	-10 54.6	-1.0900	0.5614	0.0627	-25	-62
37 Geminorum	6.3	+3.46	+ 1.5	+25 30.3	15 32.1	- 2 38.4	+1.0450	0.5613	-0.0854	+90	+36
39 Geminorum	6.3	3.45	2.2	26 13.0	17 0.0	- 1 13.8	+0.1611	0.5613	0.0892	+53	-14
40 Geminorum	6.3	3.45	2.1	26 3.3	17 17.0	- 0 57.4	+0.3079	0.5613	0.0899	+63	- 7
W. vi, 1656	8.2	3.46	1.5	26 59.4	19 6.7	+ 0 48.2	-0.8537	0.5613	0.0947	- 6	-63
47 Geminorum	6.0	3.42	0.8	27 1.6	22 19.6	+ 3 54.2	-1.2080	0.5607	0.1030	-38	-63
49 Geminorum	7.2	+3.39	+ 1.0	+25 55.3	22 57.5	+ 4 30.7	-0.1040	0.5607	-0.1047	+38	-29
B. A. C. 2363	7.3	3.35	1.2	24 53.4	23 40.0	+ 5 11.6	+0.9128	0.5607	0.1064	+90	+25
52 Geminorum	6.3	3.35	1.2	25 3.9	23 46.3	+ 5 17.7	+0.7171	0.5607	0.1068	+90	+13
A Geminorum	5.7	3.31	+ 0.3	25 15.0	30 3 30.6	+ 8 53.9	+0.1020	0.5603	0.1163	+50	-19
κ Geminorum	3.7	3.18	- 1.2	24 38.8	12 28.7	- 6 27.6	-0.4054	0.5589	0.1386	+21	-48
82 Geminorum	6.3	+3.13	- 1.1	+23 23.9	14 15.8	- 4 44.4	+0.6494	0.5585	-0.1430	+90	+ 6
84 Geminorum	6.8	3.08	1.2	22 36.1	16 11.5	- 2 52.8	+1.2040	0.5580	0.1477	+90	+44
7 Cancri	6.3	3.02	2.0	22 21.7	20 51.5	+ 1 37.0	+0.7350	0.5571	0.1586	+90	+ 9
μ^1 Cancri	6.3	3.02	2.3	22 55.9	21 54.6	+ 2 37.9	-0.0260	0.5569	0.1612	+42	-31
B. A. C. 2703	7.5	3.01	2.3	22 45.4	22 2.1	+ 2 45.1	+0.1355	0.5567	0.1614	+51	-22
μ^9 Cancri	5.7	+3.00	- 2.2	+21 53.0	22 33.5	+ 3 15.4	+0.9598	0.5564	-0.1627	+90	+22

OCTOBER.

B. A. C. 2788	6.0	+2.92	-2.7	+21 4.5	1 4 1.2	+ 8 31.3	+0.8774	0.5560	-0.1753	+90	+16
η Cancri	5.4	2.84	3.8	20 47.6	9 24.8	-10 16.7	+0.1894	0.5540	0.1866	+54	-22
35 Cancri	6.3	2.81	3.6	19 56.7	10 34.0	- 9 9.9	+0.8506	0.5537	0.1891	+90	-12
B. A. C. 2899	7.2	2.78	3.7	19 37.7	11 38.6	- 8 7.6	+0.9701	0.5535	0.1913	+90	+19
B. A. C. 2907	8.8	2.78	3.9	19 57.3	12 14.5	- 7 33.0	+0.5193	0.5534	0.1926	+77	- 6
38 Cancri	7.0	+2.78	-4.0	+20 8.6	12 28.9	- 7 19.0	+0.2786	0.5534	-0.1931	+60	-18
B. A. C. 2914	7.2	2.78	4.0	19 54.3	12 32.7	- 7 15.4	+0.5124	0.5534	0.1932	+76	- 7
39 Cancri	7.0	2.78	4.1	20 22.4	12 39.1	- 7 9.2	+0.0086	0.5534	0.1934	+44	-32
40 Cancri	7.3	2.78	4.1	20 20.2	12 41.4	- 7 7.0	+0.0378	0.5534	0.1936	+46	-31
B. A. C. 2919	7.3	2.77	4.1	20 2.1	12 46.3	- 7 2.3	+0.3335	0.5533	0.1937	+63	-16
ϵ Cancri	7.2	+2.77	-4.0	+19 54.6	12 48.5	- 7 0.2	+0.4555	0.5533	-0.1937	+72	-10
ζ Cancri	7.1	2.78	4.1	20 5.2	12 55.6	- 6 53.4	+0.2509	0.5531	0.1939	+58	-20
B. A. C. 2925	7.7	2.77	4.1	19 56.8	13 1.3	- 6 47.9	+0.3763	0.5531	0.1942	+66	-14
B. A. C. 2931	7.5	2.77	4.2	20 14.6	13 24.7	- 6 25.3	-0.0069	0.5529	0.1949	+43	-33
68 Cancri	7.5	2.60	4.8	17 29.2	22 12.4	+ 2 3.8	+1.0310	0.5507	0.2122	+90	+22
71 Cancri	8.0	+2.60	-5.2	+17 48.2	23 59.1	+ 3 46.8	+0.3275	0.5502	-0.2156	+63	-19
B. A. C. 3103	7.5	2.59	5.1	17 31.8	2 0 12.6	+ 3 59.8	+0.5576	0.5501	0.2160	+80	- 6
78 Cancri	7.8	2.58	5.5	17 53.3	1 26.3	+ 5 10.9	+0.0767	0.5499	0.2182	+39	-39
80 Cancri	6.8	2.58	5.8	18 28.1	2 43.3	+ 6 25.2	-0.9499	0.5498	0.2207	- 9	-72
83 Cancri	5.7	2.53	6.2	18 8.7	5 51.4	+ 9 26.8	-1.3180	0.5491	0.2261	-43	-72
7 Leonis	6.1	+2.39	-6.3	+14 50.5	13 26.6	- 7 13.8	+0.2787	0.5470	-0.2385	+60	-24
11 Leonis	6.8	2.37	6.6	14 48.9	14 24.5	- 6 17.9	+0.0743	0.5468	0.2401	+48	-15
ν Leonis	6.0	2.35	6.8	14 29.7	16 58.0	- 3 49.7	-0.2200	0.5466	0.2440	+32	-50
21 Leonis	6.8	2.30	7.0	12 19.6	20 10.8	- 0 43.5	+1.1780	0.5462	0.2488	+90	+28
23 Leonis	6.3	2.30	7.0	13 33.0	20 15.7	- 0 38.8	-0.0774	0.5462	0.2488	+39	-43
ϵ Leonis	5.3	+2.26	-7.3	+12 56.3	23 30.6	+ 2 29.5	-0.2754	0.5455	-0.2532	+29	-54
A Leonis	4.7	2.17	7.3	10 30.3	2 3 54.6	+ 6 44.4	+1.0450	0.5448	0.2589	+90	+17
η Leonis	1.3	2.20	7.8	12 28.4	4 6.8	- 6 56.3	-0.0400	0.5448	0.2591	-10	-78
44 Leonis	6.0	2.10	8.1	9 18.7	11 46.6	- 9 39.7	+0.1650	0.5442	0.2676	+53	-33
45 Leonis	6.0	2.11	8.4	10 17.4	12 51.4	- 8 37.1	-1.1040	0.5441	0.2688	-18	-80
μ Leonis	4.0	+2.08	-8.6	+ 9 50.4	15 12.3	- 6 20.9	-1.2850	0.5441	-0.2711	-33	-80

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	z'	y'	N.	S.
		Δα	Δδ								
		α	δ	α	d h m	h m				α	δ
48 Leonis	5.5	+2.04	- 8.2	+ 7 29.2	8 16 7.8	- 5 27.4	+0.8114	0.5439	-0.2719	+90	0
49 Leonis	6.0	2.06	8.6	9 11.2	16 13.4	- 5 21.9	-0.9093	0.5439	0.2721	- 4	-81
37 Sextantis	6.3	2.00	8.7	6 55.2	21 15.7	- 0 29.9	-0.0315	0.5439	0.2764	+42	-44
38 Sextantis	7.8	2.00	8.8	6 53.6	21 49.1	+ 0 2.4	-0.1592	0.5439	0.2770	+35	-51
56 Leonis	6.6	1.97	9.2	6 44.2	4 1 46.5	+ 3 51.7	-1.1050	0.5439	0.2797	-17	-83
d Leonis	5.3	+1.93	- 9.0	+ 4 10.3	3 50.7	+ 5 51.6	+0.8594	0.5443	-0.2809	+90	+ 2
75 Leonis	5.7	1.87	9.7	2 34.7	11 26.3	-10 48.2	+0.2848	0.5448	0.2848	+59	-29
76 Leonis	6.3	1.86	9.7	2 13.0	12 10.8	-10 5.3	+0.4296	0.5449	0.2851	+69	-21
79 Leonis	6.0	1.84	9.9	+ 1 58.5	14 29.9	- 7 50.9	+0.0066	0.5451	0.2859	+44	-43
v Leonis	4.4	1.79	10.1	- 0 15.2	20 19.8	- 2 13.0	+0.5301	0.5464	0.2873	+76	-16
NEW MOON.											
B. A. C. 4722	5.8	+1.75	-14.5	-17 43.1	7 16 10.9	- 8 48.7	-0.5542	0.5776	-0.2238	+ 7	-80
B. A. C. 4923	7.3	1.95	16.2	20 56.9	8 8 43.2	+ 7 4.5	-0.7823	0.5866	0.1861	-10	-90
42 Libræ	5.7	2.15	14.9	23 29.0	9 1 11.2	- 1 7.5	-0.9835	0.5936	0.1413	-27	-90
B. A. C. 5197	6.0	+2.18	-15.0	-24 23.6	3 16.7	+ 0 52.8	-0.3680	0.5943	-0.1351	+ 7	-67
b Scorpii	5.3	2.22	15.1	25 26.3	5 12.7	+ 2 44.1	+0.4165	0.5950	0.1294	+48	-20
A ³ Scorpii	5.2	2.23	14.9	25 1.2	6 12.8	+ 3 41.6	-0.1278	0.5951	0.1263	+19	-51
B. A. C. 5253	5.8	2.22	14.7	24 13.6	6 20.0	+ 3 48.5	-0.9330	0.5953	0.1260	-25	-90
B. A. C. 5255	6.0	2.24	14.9	25 6.3	6 26.2	+ 3 54.5	-0.0714	0.5953	0.1257	+21	-48
3 Scorpii	6.7	+2.23	-14.9	-24 56.3	6 36.6	+ 4 4.5	-0.2590	0.5953	-0.1252	+14	-59
4 Scorpii	6.3	2.25	15.1	25 57.8	6 54.8	+ 4 21.9	+0.7240	0.5953	0.1243	+64	- 3
π Scorpii	3.4	2.27	14.9	25 49.0	8 10.7	+ 5 34.6	+0.4238	0.5957	0.1205	+48	-20
B. A. C. 5314	5.7	2.29	14.8	25 34.7	9 52.7	+ 7 12.4	-0.0150	0.5961	0.1153	+23	-44
B. A. C. 5347	6.0	2.33	14.6	26 3.0	11 39.8	+ 8 55.1	+0.2548	0.5964	0.1097	+37	-29
o Scorpii	3.4	+2.40	-14.1	-25 20.8	16 35.3	-10 21.7	-0.9521	0.5971	-0.0945	-29	-90
a Scorpii	1.2	2.47	14.1	26 12.3	19 39.5	- 7 25.0	-0.3681	0.5971	0.0848	+ 2	-67
B. A. C. 5800	7.5	2.78	12.2	26 51.8	10 12.9	+ 8 42.5	-0.6845	0.5954	0.0309	-19	-90
A Ophiuchi	4.9	2.77	12.8	26 27.2	12 56.0	+ 9 8.3	-1.1140	0.5954	0.0296	-47	-90
B. A. C. 5813	6.8	2.77	12.7	26 24.0	13 15.9	+ 9 27.5	-1.7790	0.5953	0.0284	-52	-90
38 Ophiuchi	6.7	+2.80	-11.9	-26 31.1	13 46.7	+ 9 57.0	-1.0740	0.5953	-0.0267	-44	-90
43 Ophiuchi	5.8	2.87	12.0	28 2.7	15 54.4	+11 59.4	+0.4270	0.5946	-0.0200	+40	-19
3 Sagittarii	4-6	3.03	10.3	27 47.7	11 1 7.3	- 3 10.4	+0.1227	0.5907	+0.0090	+21	-36
B. A. C. 6127	5.1	3.19	9.1	28 28.3	9 1.4	+ 4 24.5	+0.9870	0.5868	0.0334	+62	+17
B. A. C. 6194	5.1	3.21	7.9	27 4.7	12 56.5	+ 8 10.2	-0.2889	0.5816	0.0450	+ 3	-61
φ Sagittarii	3.7	+3.41	- 5.7	-27 6.0	23 53.8	- 5 18.4	+0.3996	0.5763	+0.0765	+43	-21
σ Sagittarii	2.3	3.45	4.7	26 25.6	12 3 48.1	- 1 33.0	+0.0205	0.5736	0.0871	+23	-42
ψ Sagittarii	5.4	3.55	2.6	25 26.2	12 10.2	+ 6 30.1	-0.1936	0.5665	0.1088	+14	-55
χ ¹ Sagittarii	5.4	3.59	1.6	24 42.6	16 16.2	+10 27.1	-0.4868	0.5632	0.1190	0	-76
χ ² Sagittarii	6.3	3.59	1.5	24 37.0	16 19.0	+10 29.7	-0.5806	0.5630	0.1190	- 5	-84
χ ³ Sagittarii	5.6	+3.57	- 1.3	-24 10.0	16 22.6	+10 33.2	-1.0460	0.5630	+0.1191	-33	-90
η ¹ Sagittarii	5.7	3.65	0.8	24 56.8	20 50.6	- 9 8.6	+0.3296	0.5588	0.1296	+44	-25
η ² Sagittarii	4.7	3.67	- 0.5	25 6.8	21 7.7	- 8 52.1	+0.5419	0.5585	0.1303	+56	-13
53 Sagittarii	6.7	3.64	+ 0.2	23 39.9	22 30.0	- 7 32.8	-0.8039	0.5575	0.1335	-16	-90
B. A. C. 6727	6.2	3.64	0.3	23 40.0	22 37.6	- 7 25.5	-0.7847	0.5573	0.1336	-15	-90
4 Capricorni	6.1	+3.81	+ 4.3	-22 7.8	18 15 27.3	+ 8 48.9	+0.1348	0.5421	+0.1683	+37	-36
19 Capricorni	6.1	3.87	9.0	18 18.9	14 8 46.7	+ 1 34.2	-0.7731	0.5271	0.1968	- 6	-90
20 Capricorni	6.3	3.90	9.2	19 26.1	11 5.1	+ 3 48.2	+0.8886	0.5252	0.2003	+71	+ 6
21 Capricorni	6.4	3.89	9.9	17 56.0	11 43.4	+ 4 25.3	-0.5985	0.5244	0.2010	+ 4	-84
θ Capricorni	4.1	3.91	10.4	17 38.6	14 12.4	+ 6 49.6	-0.4072	0.5226	0.2046	+14	-68
31 Capricorni	6.7	+3.97	+11.4	-17 53.7	20 18.5	-11 15.6	+1.1400	0.5181	+0.2123	+72	+23
ι Capricorni	4.4	3.97	12.0	17 16.4	22 19.0	- 9 18.8	+0.8952	0.5159	0.2149	+73	+ 5
42 Capricorni	5.6	3.96	14.4	14 30.5	15 8 12.3	+ 0 16.6	+0.0832	0.5095	0.2256	+42	-39
44 Capricorni	6.1	3.97	14.6	14 52.3	8 58.9	+ 1 1.9	+0.6533	0.5090	0.2263	+75	- 9
45 Capricorni	6.3	3.99	14.5	15 13.4	9 28.0	+ 1 30.2	+1.1444	0.5089	0.2268	+75	+22
μ Capricorni	5.2	+4.01	+15.8	-14 2.2	14 18.2	+ 6 11.8	+0.9654	0.5059	+0.2314	+74	+ 9

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
ϵ^1 Aquarii	6.8	+4.00	+18.0	-11 19.6	15 23 29.5	- 8 52.7	+0.1729	0.5008	+0.2386	+50	-34
ϵ^2 Aquarii	5.6	4.02	17.7	12 4.3	23 32.2	- 8 50.1	+0.9972	0.5006	0.2388	+78	+11
B. A. C. 7740	7.0	4.02	18.0	11 34.4	16 0 26.1	- 7 57.6	+0.6680	0.5001	0.2394	+78	- 8
B. A. C. 7774	6.7	3.99	19.0	9 33.2	2 55.7	- 5 32.3	-0.9401	0.4989	0.2411	- 9	-90
67 Aquarii	6.4	4.02	21.5	7 30.0	17 21.1	+ 8 29.1	+0.3442	0.4930	0.2490	+61	-26
B. A. C. 7086	5.9	+4.04	+22.7	- 5 32.1	17 0 0.4	- 9 2.6	-0.1486	0.4907	+0.2514	+35	-52
B. A. C. 7993	6.6	4.04	22.8	5 21.6	1 11.1	- 7 53.8	-0.0458	0.4906	0.2519	+40	-46
B. A. C. 8017	6.1	4.05	23.1	5 15.9	3 33.4	- 5 35.3	+0.4478	0.4899	0.2525	+69	-21
B. A. C. 8094	5.4	4.08	24.2	4 3.3	11 28.1	+ 2 6.6	+1.1200	0.4896	0.2542	+86	+18
11 Piscium	6.4	4.10	25.2	2 21.4	19 19.8	+ 9 45.7	+1.2490	0.4873	0.2550	+88	+29
12 Piscium	6.8	+4.09	+25.3	- 1 36.1	19 21.8	+ 9 47.6	+0.4237	0.4873	+0.2550	+68	-22
13 Piscium	6.4	4.10	25.5	1 39.2	20 45.1	+11 8.7	+0.8347	0.4873	0.2551	+88	+ 0
14 Piscium	5.9	4.11	25.5	- 1 48.9	21 59.3	-11 39.1	+1.3290	0.4872	0.2551	+88	+37
15 Piscium	6.6	4.08	25.5	+ 0 44.7	22 45.4	-10 54.3	-1.3070	0.4870	0.2552	-37	-89
λ Piscium	4.5	4.08	26.4	1 12.9	18 2 29.8	- 7 15.8	-0.8742	0.4870	0.2549	-3	-89
21 Piscium	5.8	+4.11	+26.7	+ 0 30.3	6 41.9	- 3 10.4	+0.9822	0.4870	+0.2546	+90	+ 9
22 Piscium	5.0	4.10	27.1	2 21.5	8 7.4	- 1 47.1	-0.7071	0.4870	0.2545	+ 7	87
25 Piscium	6.4	4.11	27.0	1 31.1	8 45.5	+ 1 10.2	+0.3860	0.4871	0.2543	+66	24
45 Piscium	6.9	4.17	28.5	7 7.5	19 3 14.6	- 7 10.5	-1.1750	0.4885	0.2491	-23	83
51 Piscium	5.8	4.19	28.6	6 23.4	7 1.0	- 3 30.1	+0.5777	0.4897	0.2474	+80	-13
η Piscium	3.7	+4.35	+28.9	+14 49.1	20 15 32.9	+ 4 8.2	-1.0760	0.5006	+0.2242	-17	-75
101 Piscium	6.3	4.37	28.7	14 8.3	17 51.6	+ 6 22.9	+0.1946	0.5017	0.2219	+55	-28
104 Piscium	7.5	4.38	28.6	13 46.0	19 43.3	+ 8 11.4	+1.0140	0.5027	0.2199	+90	+15
105 Piscium	6.3	4.39	28.6	15 53.2	19 55.7	+ 8 23.5	-1.2940	0.5027	0.2198	-38	74
4 Arietis	5.7	4.41	28.4	16 26.8	21 0 26.4	-11 13.4	-0.9361	0.5047	0.2148	- 8	74
B. A. C. 549	8.2	+4.41	+28.5	+16 30.6	0 31.9	-11 8.1	-0.9863	0.5052	+0.2147	-11	73
ϵ Arietis	5.7	4.44	28.1	17 19.1	5 15.5	- 6 32.7	-0.8816	0.5070	0.2091	- 5	73
15 Arietis	5.7	4.49	27.6	19 1.1	12 8.4	+ 0 8.1	-1.3610	0.5109	0.2006	-56	71
B. A. C. 686	7.2	4.50	27.5	19 8.1	13 48.6	+ 1 45.3	-1.1580	0.5119	0.1984	-25	-71
θ Arietis	5.7	4.51	27.3	19 25.7	15 59.8	+ 3 52.7	-1.0540	0.5130	0.1954	-17	71
23 Arietis	7.5	+4.51	+27.1	+19 13.2	16 31.3	+ 4 23.2	-0.7204	0.5136	+0.1946	+ 4	-71
26 Arietis	6.0	4.54	26.6	19 24.0	22 21.2	+10 2.7	+0.1906	0.5166	0.1862	+54	24
μ Arietis	6.0	4.57	25.9	19 34.5	22 4 14.2	- 8 15.1	+1.0670	0.5199	0.1772	+90	+27
B. A. C. 920	7.0	4.62	24.8	21 12.6	12 21.8	- 0 22.6	+0.6375	0.5248	0.1637	+90	+ 2
ϵ Arietis	4.6	4.61	24.8	20 55.9	12 32.0	- 0 12.7	+0.9757	0.5250	0.1635	+90	+22
64 Arietis	5.7	+4.72	+22.6	+24 21.7	23 0 34.5	+11 26.8	-0.9868	0.5319	+0.1415	-15	-66
7 Tauri	6.0	4.72	21.9	24 7.3	5 22.7	- 7 54.3	-0.0645	0.5346	0.1319	+40	-30
11 Tauri	6.7	4.75	21.0	25 0.0	8 19.9	- 5 2.9	-0.6551	0.5371	0.1262	+ 7	-63
κ Pleiadum	6.3	4.72	20.9	23 28.0	10 13.9	- 3 12.6	+0.7235	0.5373	0.1221	+90	+11
17 Tauri	4.3	4.72	20.9	23 47.5	10 16.1	- 3 10.5	+0.9223	0.5373	0.1221	+90	+24
18 Tauri	6.3	+4.74	+20.8	+24 31.1	10 23.4	- 3 3.5	+0.1344	0.5375	+0.1217	+51	-19
19 Tauri	5.0	4.73	20.9	24 8.7	10 25.0	- 3 1.9	+0.5487	0.5375	0.1217	+81	+ 2
20 Tauri	5.0	4.73	20.9	24 2.8	10 42.4	- 2 45.0	+0.6940	0.5376	0.1210	+90	+10
21 Tauri	7.0	4.73	20.9	24 14.1	10 44.5	- 2 43.0	+0.4897	0.5376	0.1210	+76	- 1
22 Tauri	7.0	4.73	20.9	24 12.5	10 48.5	- 2 39.2	+0.5265	0.5378	0.1208	+79	+ 1
23 Tauri	4.7	+4.73	+20.9	+23 37.8	10 56.8	- 2 31.2	+1.1840	0.5378	+0.1206	+90	+44
24 Tauri	8.0	4.72	20.8	23 47.9	11 25.3	- 2 3.6	+1.0503	0.5379	0.1196	+90	+33
η Tauri	3.1	4.72	20.8	23 47.3	11 29.0	- 2 0.0	+1.0710	0.5381	0.1195	+90	+34
B. A. C. 1171	7.8	4.72	20.8	24 1.8	11 57.1	- 1 32.8	+0.8614	0.5384	0.1185	+90	+20
27 Tauri	4.0	4.72	20.7	23 44.4	12 15.8	- 1 14.8	+1.2180	0.5384	0.1185	+90	+48
28 Tauri	6.2	+4.72	+20.7	+23 49.4	12 16.4	- 1 14.2	+1.1270	0.5384	+0.1185	+90	+39
B. A. C. 1192	6.0	4.75	20.3	25 16.2	12 46.0	- 0 45.6	-0.4121	0.5386	0.1166	+20	-48
ρ Tauri	6.0	4.80	18.4	26 12.9	22 10.7	+ 8 20.2	-0.4536	0.5436	0.0961	+18	-48
ϕ Tauri	5.3	4.82	17.3	27 6.4	24 2 28.8	-11 30.4	-1.0400	0.5453	0.0864	-21	-63
χ Tauri	5.7	4.77	17.4	25 23.3	3 31.1	-10 30.2	+0.9391	0.5459	0.0840	+90	+29
W. iv, 1421	6.0	+4.81	+12.2	+27 54.2	25 0 23.7	+ 9 38.9	-0.5926	0.5539	+0.0330	+ 9	-52

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
β Tauri	1.8	+4.80	+10.1	+28 31.4	25 7 36.8	- 7 23.3	-1.0980	0.5552	+0.0145	-27	-62
136 Tauri	5.3	4.70	7.5	27 35.3	19 21.4	+ 3 56.1	-0.0833	0.5571	0.0158	+38	-20
37 Geminorum	6.3	4.38	1.2	25 30.3	26 22 10.3	+ 5 47.3	+0.8037	0.5567	0.0850	+90	+21
39 Geminorum	6.3	4.39	0.7	26 13.0	23 40.2	+ 7 14.0	0.0894	0.5563	0.0889	+38	27
40 Geminorum	6.3	4.39	+ 0.6	26 3.3	23 57.6	+ 7 30.8	+0.0572	0.5563	0.0896	+47	-19
W. vi, 1656	8.2	+4.40	- 0.2	+26 59.3	27 1 49.7	+ 9 18.8	-1.1140	0.5556	-0.0936	-27	63
49 Geminorum	7.2	4.32	0.9	25 55.2	5 45.9	-10 53.4	-0.3602	0.5552	0.1040	+23	-43
B. A. C. 2363	7.3	4.28	0.7	24 53.3	6 29.4	-10 11.4	+0.6668	0.5550	0.1057	+90	+10
52 Geminorum	6.3	4.29	0.8	25 3.8	6 35.8	-10 5.2	+0.4688	0.5549	0.1060	+75	0
A Geminorum	5.7	4.22	1.7	25 14.9	10 25.7	- 6 23.5	-0.1545	0.5540	0.1153	+35	-33
λ Geminorum	3.7	+4.10	- 3.8	+24 38.7	19 38.2	+ 2 29.4	-0.6710	0.5516	-0.1371	+ 6	64
82 Geminorum	6.3	4.04	3.7	23 23.8	21 28.3	+ 4 15.7	-0.3979	0.5512	0.1411	+68	- 7
84 Geminorum	6.8	3.99	4.4	22 36.0	23 27.3	+ 6 10.6	+0.9594	0.5507	0.1457	+90	+24
7 Cancri	6.3	3.92	4.9	22 21.6	28 4 15.6	+10 48.8	+0.4846	0.5494	0.1563	+75	- 4
μ^1 Cancri	6.3	3.92	5.3	22 55.8	5 20.6	+11 51.6	-0.2888	0.5489	0.1587	+27	44
B. A. C. 2703	7.5	+3.91	- 5.3	+22 45.3	5 28.1	+11 58.8	-0.1250	0.5487	-0.1590	+26	-36
μ^2 Cancri	5.7	3.89	5.2	21 52.9	6 0.6	-11 29.8	+0.7129	0.5486	0.1602	+90	+ 8
B. A. C. 2788	6.0	3.80	6.1	21 4.4	11 38.6	- 6 3.6	+0.6263	0.5469	0.1721	+88	+ 1
η Cancri	5.4	3.71	7.2	20 47.6	17 12.5	- 0 41.2	-0.0699	0.5455	0.1832	+40	36
35 Cancri	6.3	3.67	7.1	19 56.7	18 24.1	+ 0 28.0	+0.5992	0.5450	0.1858	+84	- 2
B. A. C. 2899	7.2	+3.64	- 7.3	+19 37.7	19 30.9	+ 1 32.5	+0.7230	0.5445	-0.1879	+90	+ 4
B. A. C. 2907	8.8	3.64	7.5	19 57.3	20 8.0	+ 2 8.3	+0.2654	0.5443	0.1891	+59	- 9
38 Cancri	7.0	3.64	7.6	20 8.6	20 22.9	+ 2 22.7	+0.0192	0.5443	0.1895	+44	32
B. A. C. 2914	7.2	3.64	7.6	19 54.3	20 26.8	+ 2 26.5	+0.2530	0.5443	0.1897	+59	20
39 Cancri	7.0	3.64	7.7	20 22.4	20 33.4	+ 2 32.9	-0.2548	0.5442	0.1899	+30	-46
40 Cancri	7.3	+3.64	- 7.8	+20 20.2	20 35.7	+ 2 35.1	-0.2235	0.5442	-0.1899	+31	44
B. A. C. 2919	7.3	3.64	7.6	20 2.1	20 40.8	+ 2 40.0	-0.0768	0.5442	0.1901	+48	29
ϵ Cancri	7.2	3.63	7.6	19 54.6	20 43.1	+ 2 42.2	+0.2006	0.5442	0.1902	+55	-22
ϵ Cancri	7.1	3.64	7.7	20 5.2	20 50.4	+ 2 49.2	-0.0087	0.5442	0.1904	+43	33
B. A. C. 2925	7.7	3.62	7.7	19 56.8	20 56.3	+ 2 54.9	+0.1204	0.5442	0.1907	+50	27
B. A. C. 2931	7.5	+3.63	- 7.8	+20 14.6	21 20.4	+ 3 18.2	-0.2704	0.5442	-0.1914	+29	47
δ Cancri	4.0	3.57	7.7	18 32.1	22 39.5	+ 4 34.6	+1.2680	0.5437	0.1938	+90	+44
68 Cancri	7.5	3.44	8.6	17 29.1	29 6 26.3	-11 54.4	+0.7927	0.5414	0.2081	+90	+ 8
71 Cancri	8.0	3.42	9.1	17 48.1	8 16.8	-10 7.6	+0.0762	0.5411	0.2112	+48	31
B. A. C. 3103	7.5	3.42	9.0	17 31.7	8 30.7	- 9 54.2	+0.3118	0.5408	0.2116	+62	-19
78 Cancri	7.8	+3.41	- 9.4	+17 53.2	9 46.9	- 8 40.6	-0.3306	0.5404	-0.2137	+26	53
80 Cancri	6.8	3.40	9.8	18 28.0	11 6.7	- 7 23.5	-1.2190	0.5400	0.2160	-31	-72
7 Leonis	6.1	3.16	10.2	14 50.4	22 12.9	+ 3 20.4	+0.0378	0.5374	0.2334	+46	-36
11 Leonis	6.8	3.14	10.7	14 48.8	23 12.8	+ 4 18.3	-0.1682	0.5371	0.2347	+34	-47
ψ Leonis	6.0	3.11	11.0	14 29.6	80 1 51.8	+ 6 52.0	-0.4643	0.5368	0.2385	+19	64
21 Leonis	6.8	+3.05	-11.2	+12 19.5	5 11.6	+10 5.3	+0.9592	0.5363	-0.2431	+90	+13
23 Leonis	6.3	3.05	11.2	13 32.9	5 16.6	+10 10.1	-0.3163	0.5363	0.2431	+27	56
ν Leonis	5.3	3.00	11.5	12 56.2	8 38.5	-10 34.7	-0.5135	0.5358	0.2474	+17	68
A Leonis	4.7	2.89	11.5	10 30.2	13 11.8	- 6 10.4	+0.8320	0.5353	0.2530	+90	+ 4
α Leonis	1.3	2.92	12.1	12 28.3	13 24.4	- 5 58.2	-1.2290	0.5352	0.2531	-30	-78
44 Leonis	6.0	+2.79	-12.2	+ 9 18.6	21 20.1	+ 1 41.8	-0.0491	0.5348	-0.2615	+41	-44
45 Leonis	6.0	2.79	12.7	10 17.3	22 27.2	+ 2 46.7	-1.3350	0.5346	0.2626	-40	-80
48 Leonis	5.5	2.70	12.2	7 29.1	31 1 50.1	+ 6 3.0	+0.6145	0.5346	0.2657	+83	10
49 Leonis	6.0	2.73	12.8	9 11.1	1 55.9	+ 6 8.6	-1.1320	0.5348	0.2659	-20	81
37 Sextantis	6.3	2.65	12.6	6 55.1	7 8.1	+11 10.6	-0.2334	0.5348	0.2701	+31	-55
38 Sextantis	7.8	+2.64	-12.6	+ 6 53.5	7 42.6	+11 44.0	+0.3616	0.5348	-0.2704	+25	-62
56 Leonis	6.6	2.59	13.1	6 44.2	11 47.5	- 8 19.2	-1.3140	0.5355	0.2734	-36	83
δ Leonis	5.3	2.54	12.7	4 10.3	13 55.5	- 6 15.4	+0.6836	0.5355	0.2746	-80	- 8
75 Leonis	5.7	2.45	13.2	2 34.7	21 44.5	+ 1 18.2	+0.1151	0.5369	0.2786	+49	-37
76 Leonis	6.3	+2.43	-13.1	+ 2 13.0	22 30.2	+ 2 2.3	+0.2651	0.5370	-0.2789	+58	-29

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	°	d h m	h m				°	°
79 Leonis	6.0	+2.41	-13.3	+ 1 58.5	1 0 53.1	+ 4 20.4	-0.1565	0.5375	-0.2798	+35	-52
v Leonis	4.4	2.33	13.1	- 0 15.2	6 52.2	+10 7.6	+0.3851	0.5394	0.2813	+65	-24
χ Virginis	5.2	2.04	13.9	7 24.6	2 11 2.5	-10 39.7	-0.4036	0.5521	0.2750	+21	-67
28 Virginis	7.0	2.05	14.1	6 55.9	12 14.1	- 9 30.6	-1.2170	0.5527	0.2740	-27	90
ψ Virginis	5.2	2.00	14.0	8 58.7	17 38.8	- 4 17.3	-0.6761	0.5560	0.2700	+ 7	-89
γ Virginis	5.9	+1.98	-14.2	-10 11.3	23 29.2	+ 1 20.6	-1.0480	0.5598	-0.2643	-17	-90
i Virginis	5.7	1.94	14.2	12 10.2	8 7 28.4	+ 9 2.2	-1.1800	0.5657	0.2550	-28	-90
75 Virginis	6.0	1.93	14.0	14 49.9	10 1.6	+11 29.7	+0.7800	0.5674	0.2515	+70	- 2
83 Virginis	6.0	1.93	14.2	15 39.6	14 50.6	- 7 52.1	+0.3964	0.5710	0.2443	+59	-23
NEW MOON.											
b Scorpii	5.3	+2.16	-13.5	-25 26.3	8 15 49.2	- 8 51.2	+0.5360	0.6036	-0.1288	+55	-14
A ^s Scorpii	5.2	2.17	13.5	25 1.2	16 18.1	- 7 54.8	+0.0033	0.6036	0.1257	+25	-43
B. A. C. 5253	5.8	2.17	13.4	24 13.6	16 55.1	- 7 48.1	-0.7934	0.6036	0.1254	-17	-90
B. A. C. 5255	6.0	2.18	13.4	25 6.3	17 1.2	- 7 42.3	+0.0592	0.6037	0.1252	+28	-40
3 Scorpii	6.7	+2.17	-13.4	-24 56.3	17 11.3	- 7 32.6	-0.1266	0.6039	-0.1247	+18	-51
4 Scorpii	6.3	2.18	13.5	25 57.8	17 29.1	- 7 15.5	+0.8450	0.6039	0.1238	+64	+ 5
π Scorpii	3.4	2.19	13.4	25 49.1	18 43.2	- 6 4.6	+0.5525	0.6040	0.1199	+55	-12
B. A. C. 5314	5.7	2.21	13.2	25 34.7	20 22.8	- 4 29.4	+0.1234	0.6046	0.1148	+30	-36
B. A. C. 5347	6.0	2.24	13.0	26 3.0	22 7.3	- 2 49.0	+0.3934	0.6050	0.1091	+45	-21
σ Scorpii	3.4	+2.27	-12.7	-25 20.8	6 2 55.4	+ 1 46.6	-0.7889	0.6064	-0.0939	-20	-90
α Scorpii	1.2	2.32	12.5	26 12.3	5 54.7	+ 4 38.3	-0.2049	0.6070	0.0841	+10	-56
B. A. C. 5800	7.5	2.54	10.8	26 51.8	22 15.6	- 3 42.9	-0.4866	0.6060	0.0298	- 9	-76
A Ophiuchi	4.9	2.51	11.6	26 27.2	22 41.9	- 3 17.8	-0.9101	0.6059	0.0283	-33	90
B. A. C. 5813	6.8	2.51	11.5	26 24.0	23 1.1	- 2 59.3	-0.9736	0.6057	0.0272	-37	-90
38 Ophiuchi	6.7	+2.55	-10.5	-26 31.1	23 31.1	- 2 30.6	-0.8674	0.6056	-0.0255	-31	-90
43 Ophiuchi	5.8	2.61	10.5	28 2.7	7 1 34.9	- 0 32.0	+0.6162	0.6053	-0.0187	+53	- 8
3 Sagittarii	4.6	2.73	9.2	27 47.7	10 30.9	+ 8 1.2	+0.3324	0.6019	+0.0107	+33	-24
B. A. C. 6127	5.1	2.85	8.1	28 28.2	18 10.3	- 8 38.6	+1.1950	0.5974	0.0354	+62	-38
B. A. C. 6194	5.1	2.86	7.1	27 4.9	21 58.0	- 5 0.3	-0.0541	0.5947	0.0472	+15	-47
ϕ Sagittarii	3.7	+3.02	- 5.2	-27 6.0	8 8 35.0	+ 5 10.7	+0.6389	0.5869	+0.0789	+58	- 7
σ Sagittarii	2.3	3.06	4.4	26 25.6	12 22.2	+ 8 48.9	+0.2699	0.5806	0.0897	+36	-28
ψ Sagittarii	5.4	3.14	2.6	25 26.2	20 29.3	- 7 23.0	+0.0721	0.5757	0.1115	+28	-39
χ^1 Sagittarii	5.4	3.18	1.6	24 42.7	9 0 28.1	- 3 33.2	-0.2136	0.5722	0.1214	+14	-56
χ^2 Sagittarii	6.3	3.17	1.6	24 37.1	0 30.8	- 3 30.7	-0.3049	0.5720	0.1216	+10	-62
χ^3 Sagittarii	5.6	+3.16	- 1.4	-24 10.1	0 34.3	- 3 27.3	-0.7647	0.5718	+0.1216	-15	-90
A ¹ Sagittarii	5.7	3.23	0.8	24 56.8	4 54.7	+ 0 43.3	+0.5944	0.5679	0.1323	+59	-10
A ² Sagittarii	4.7	3.26	0.8	25 6.8	5 11.3	+ 0 59.3	+0.8035	0.5675	0.1329	+65	+ 2
53 Sagittarii	6.7	3.22	- 0.1	23 39.9	6 31.3	+ 2 16.3	-0.5172	0.5661	0.1361	0	-78
B. A. C. 6727	6.2	3.23	0.0	23 40.0	6 38.8	+ 2 23.5	-0.4999	0.5658	0.1363	+ 1	-76
4 Capricorni	6.1	+3.38	+ 3.5	-22 7.9	23 2.1	- 5 48.5	+0.4217	0.5493	+0.1708	+53	-20
19 Capricorni	6.1	3.48	7.9	18 18.9	10 15 58.4	+10 33.5	-0.4688	0.5325	0.1988	+10	73
20 Capricorni	6.3	3.52	8.1	19 26.2	18 14.0	-11 15.3	+1.1760	0.5306	0.2021	+71	+27
21 Capricorni	6.4	3.49	8.7	17 56.1	18 51.6	-10 38.9	-0.2925	0.5299	0.2030	+20	-60
θ Capricorni	4.1	3.50	9.1	17 38.7	21 17.8	- 8 17.4	-0.1030	0.5276	0.2063	+30	-49
29 Capricorni	5.7	+3.50	+10.7	-15 36.0	11 2 5.4	- 3 38.9	-1.2810	0.5234	+0.2123	-42	-90
i Capricorni	4.4	3.57	10.6	17 16.4	5 15.9	- 0 34.3	+1.1880	0.5206	0.2162	+73	+28
42 Capricorni	5.6	3.59	13.0	14 30.5	15 0.2	+ 8 52.2	+0.3810	0.5128	0.2263	+59	-23
44 Capricorni	6.1	3.61	13.3	14 52.3	15 46.2	+ 9 36.8	+0.9456	0.5123	0.2272	+75	+ 8
μ Capricorni	5.2	3.66	14.3	14 2.3	21 1.3	- 9 17.2	+1.2560	0.5087	0.2318	+76	+33
ϵ^1 Aquarii	6.8	+3.67	+16.5	-11 19.6	12 6 6.6	- 0 28.1	+0.4663	0.5025	+0.2385	+67	-19
ϵ^2 Aquarii	5.6	3.69	16.2	12 4.3	6 9.2	- 0 25.6	+1.2830	0.5025	0.2388	+78	+34
B. A. C. 7740	7.0	3.69	16.5	11 34.4	7 2.6	+ 0 26.4	+0.9103	0.5020	0.2392	+78	+ 8
B. A. C. 7774	6.7	3.66	17.5	9 33.2	9 30.8	+ 2 50.3	-0.6443	0.5006	0.2407	+ 8	86
67 Aquarii	6.4	3.73	20.1	7 30.1	23 49.8	- 7 14.8	+0.6230	0.4910	0.2480	+80	11
B. A. C. 7986	5.9	+3.76	+21.5	- 5 32.2	13 6 26.9	- 0 48.6	+0.1242	0.4914	+0.2501	+49	-37

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 7993	6.6	+3.77	+21.6	- 5 21.7	18 7 37.3	+ 0 19.9	+0.2266	0.4909	+0.2506	+55	32
B. A. C. 8017	6.1	3.79	21.9	5 15.9	9 58.9	+ 2 37.6	+0.7112	0.4901	0.2512	+84	- 6
B. A. C. 8094	5.4	3.84	23.0	4 3.3	17 52.0	+10 17.8	+1.3710	0.4882	0.2525	+86	+43
12 Piscium	6.8	3.88	24.3	1 36.1	14 1 44.5	- 6 2.2	+0.6633	0.4868	0.2530	+87	9
13 Piscium	6.4	3.89	24.5	- 1 39.2	3 7.8	- 4 41.1	+1.0740	0.4867	0.2530	+88	+15
15 Piscium	6.6	+3.86	+25.4	+ 0 44.7	5 7.9	- 2 44.3	-1.0640	0.4865	+0.2530	-15	89
λ Piscium	4.5	3.88	25.8	1 12.9	8 52.0	+ 0 54.0	-0.6403	0.4861	0.2528	-10	85
21 Piscium	5.8	3.93	25.9	0 30.3	13 4.0	+ 4 59.2	+1.2050	0.4862	0.2524	+90	+25
22 Piscium	5.0	3.93	26.5	2 21.5	14 29.5	+ 6 22.5	-0.4846	0.4862	0.2521	+18	72
25 Piscium	6.4	3.94	26.3	1 31.1	15 7.5	+ 6 59.4	+0.6043	0.4862	0.2519	+82	10
45 Piscium	6.9	+4.07	+28.1	+ 7 7.5	15 9 36.3	+ 0 58.7	-0.9904	0.4879	+0.2465	-10	83
51 Piscium	5.8	4.10	28.4	6 23.3	13 22.8	+ 4 39.1	+0.7525	0.4885	0.2447	+90	- 3
75 Piscium	6.0	4.30	30.0	12 24.4	16 8 22.1	- 0 52.5	-1.3810	0.4952	0.2333	50	-78
η Piscium	3.7	4.42	29.9	14 49.1	21 53.7	-11 43.5	-0.9815	0.5007	0.2217	-11	75
101 Piscium	6.3	4.44	29.7	14 8.3	17 0 12.2	- 9 29.0	+0.2815	0.5018	0.2195	+59	24
104 Piscium	7.5	+4.46	+29.5	+13 46.0	2 3.8	- 7 40.6	+1.1000	0.5028	+0.2176	+90	+23
105 Piscium	6.3	4.48	29.9	15 53.2	2 16.0	- 7 28.7	-1.2120	0.5030	0.2174	29	-74
4 Arietis	5.7	4.53	29.7	16 26.8	6 46.2	- 3 6.2	-0.8646	0.5054	0.2125	- 4	74
B. A. C. 549	8.2	4.53	29.7	16 30.6	6 51.7	- 3 0.9	-0.9145	0.5054	0.2123	- 7	73
ϵ Arietis	5.7	4.58	29.5	17 19.1	11 34.7	+ 1 33.9	-0.8235	0.5078	0.2069	- 2	73
15 Arietis	5.7	+4.68	+29.2	+19 1.1	18 26.2	+ 8 13.3	-1.3180	0.5119	+0.1985	-45	-71
B. A. C. 686	7.2	4.70	29.0	19 8.1	20 6.1	+ 9 50.3	-1.1200	0.5129	0.1963	-23	-71
θ Arietis	5.7	4.71	28.9	19 25.7	22 16.8	+11 57.2	-1.0210	0.5142	0.1932	-15	-71
23 Arietis	7.5	4.71	28.7	19 23.2	22 48.2	-11 32.5	-0.6879	0.5147	0.1927	+ 6	71
26 Arietis	6.0	4.77	28.2	19 24.1	18 4 36.7	- 5 54.3	+0.2051	0.5181	0.1842	+55	23
μ Arietis	6.0	+4.85	+27.4	+19 34.6	10 27.9	- 0 13.9	+1.0620	0.5219	+0.1754	+90	+27
B. A. C. 920	7.0	4.95	26.4	21 12.6	18 33.0	+ 7 36.1	+0.6179	0.5270	0.1619	+87	+ 1
ϵ Arietis	4.6	4.94	26.4	20 55.9	18 43.1	+ 7 45.9	+0.9535	0.5271	0.1615	+90	+21
64 Arietis	5.7	5.13	24.6	24 21.7	19 6 41.0	- 4 39.2	-1.0350	0.5344	0.1397	-19	66
7 Tauri	6.0	5.15	23.7	24 7.3	11 27.1	- 0 2.4	-0.1232	0.5374	0.1302	+36	-33
11 Tauri	6.7	+5.22	+23.0	+25 0.0	14 23.1	+ 2 47.8	-0.7221	0.5393	+0.1243	+ 2	-65
γ Pleiadum	6.3	5.20	22.6	23 28.1	16 16.3	+ 4 37.3	+0.6485	0.5404	0.1203	+90	+ 8
17 Tauri	4.3	5.19	22.6	23 47.6	16 18.5	+ 4 39.4	+0.8450	0.5404	0.1203	+90	+19
18 Tauri	6.3	5.21	22.6	24 31.2	16 25.7	+ 4 46.3	+0.0593	0.5406	0.1199	+47	22
19 Tauri	5.0	5.20	22.5	24 8.8	16 27.4	+ 4 48.0	+0.4741	0.5406	0.1199	+74	- 2
20 Tauri	5.0	+5.20	+22.5	+24 2.9	16 44.6	+ 5 4.7	+0.6173	0.5408	+0.1194	+90	+ 6
21 Tauri	7.0	5.20	22.5	24 14.2	16 46.7	+ 5 6.7	+0.4133	0.5408	0.1194	+70	- 4
22 Tauri	7.0	5.21	22.5	24 12.6	16 50.6	+ 5 10.4	+0.4519	0.5408	0.1192	+73	- 2
23 Tauri	4.7	5.19	22.5	23 37.9	16 58.9	+ 5 18.4	+1.1060	0.5408	0.1189	+90	+37
24 Tauri	8.0	5.20	22.3	23 48.0	17 27.2	+ 5 45.8	+0.9752	0.5411	0.1180	+90	+28
η Tauri	3.1	+5.20	+22.3	+23 47.4	17 30.8	+ 5 49.3	+0.9936	0.5413	+0.1177	+90	+29
B. A. C. 1171	7.8	5.21	22.2	24 1.9	17 58.7	+ 6 16.3	+0.7805	0.5416	0.1170	+90	+16
27 Tauri	4.0	5.20	22.2	23 44.5	18 17.3	+ 6 34.2	+1.1360	0.5416	0.1159	+90	+40
28 Tauri	6.2	5.20	22.2	23 49.5	18 17.9	+ 6 34.8	+1.0450	0.5416	0.1159	+90	+33
B. A. C. 1192	6.0	5.25	22.0	25 16.3	18 47.3	+ 7 3.2	-0.4920	0.5420	0.1149	+16	52
ρ Tauri	6.0	+5.33	+22.0	+26 12.9	20 4 7.7	- 7 56.3	-1.5478	0.5467	+0.0944	+12	54
ϕ Tauri	5.3	5.38	19.0	27 6.4	8 23.7	- 3 48.1	-1.1480	0.5491	0.0846	-31	63
χ Tauri	5.7	5.41	18.8	25 23.3	9 25.5	- 2 48.5	+0.8252	0.5495	0.0822	+90	+24
W. iv. 1421	6.0	5.45	12.1	27 54.2	21 6 8.9	- 6 48.5	-0.7463	0.5577	0.0311	0	62
β Tauri	1.8	5.48	10.9	28 31.4	13 19.3	+ 0 6.6	-1.2650	0.5591	+0.0127	-54	-61
136 Tauri	5.3	+5.43	+ 7.6	+27 35.3	22 1 0.1	+11 22.2	-0.2714	0.5604	-0.0177	+28	-30
ϵ Geminorum	3.2	5.28	+ 1.3	25 14.0	22 50.5	+ 8 25.5	+1.2600	0.5500	0.0744	+90	+58
37 Geminorum	6.3	5.25	- 0.1	25 30.3	23 3 46.0	-10 49.6	+0.5685	0.5511	0.0868	+84	+ 8
39 Geminorum	6.3	5.27	0.7	26 13.0	5 16.0	- 9 22.8	-0.3260	0.5575	0.0905	+25	-40
40 Geminorum	6.3	5.27	0.9	26 3.3	5 33.3	- 9 6.1	0.1828	0.5575	0.0912	+33	-32
48 Geminorum	6.0	+5.16	- 2.1	+24 18.1	11 14.6	- 3 37.0	+1.1410	0.5559	-0.1052	+90	+42

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	° ' "	d h m	h m				°	' "
49 Geminorum	7.2	+5.23	-2.6	+25 55.3	23 11 22.5	-3 29.3	-0.6116	0.5559	-0.1055	+9	-59
B. A. C. 2363	7.3	5.17	2.5	24 53.4	12 6.2	-2 47.2	+0.4184	0.5558	0.1073	+70	-3
52 Geminorum	6.3	5.18	2.6	25 3.9	12 12.6	-2 41.0	+0.2181	0.5556	0.1076	+56	-13
A Geminorum	5.7	5.16	3.9	25 14.9	16 3.4	+1 1.6	-0.4107	0.5546	0.1168	+20	-47
κ Geminorum	3.7	+5.03	-6.3	+24 38.7	24 1 19.3	+9 57.9	-0.9445	0.5507	-0.1380	-12	-65
82 Geminorum	6.3	4.96	6.5	23 23.8	3 10.2	+11 45.0	+0.1279	0.5504	0.1422	+51	-21
84 Geminorum	6.8	4.91	6.8	22 36.0	5 10.3	-10 19.1	+0.6892	0.5499	0.1465	+90	+8
7 Cancri	6.3	4.85	8.0	22 21.6	10 1.4	-5 38.1	+0.2073	0.5476	0.1570	+55	-19
μ^1 Cancri	6.3	+4.86	-8.4	+22 55.8	11 7.1	-4 34.6	-0.5723	0.5474	-0.1592	+12	-61
B. A. C. 2703	7.5	4.85	8.4	25 45.3	11 14.9	-4 27.1	-0.4075	0.5473	0.1596	+21	-51
μ^2 Cancri	5.7	4.82	8.4	21 52.9	11 47.5	-3 55.5	+0.4340	0.5473	0.1607	+71	-7
B. A. C. 2788	6.0	4.73	9.6	21 4.3	17 29.6	+1 34.8	+0.3445	0.5448	0.1723	+64	-14
35 Cancri	6.3	+4.61	-10.9	+19 56.6	25 0 20.8	+8 12.1	-0.3118	0.5420	-0.1854	+62	-17
B. A. C. 2899	7.2	4.57	11.1	19 37.6	1 28.7	+9 17.6	+0.4348	0.5414	0.1875	+70	-11
B. A. C. 2907	8.8	4.58	11.4	19 57.2	2 6.3	+9 53.9	-0.0228	0.5414	0.1887	+42	-34
38 Cancri	7.0	4.57	11.5	20 8.5	2 21.5	+10 8.7	-0.2746	0.5413	0.1891	+28	-47
B. A. C. 2914	7.2	+4.57	-11.4	+19 54.2	2 25.5	+10 12.5	-0.0458	0.5412	-0.1892	+41	-35
39 Cancri	7.0	4.58	11.6	20 22.3	2 32.2	+10 19.0	-0.5527	0.5412	0.1894	+13	-63
40 Cancri	7.3	4.58	11.6	20 20.1	2 34.5	+10 21.2	-0.5210	0.5412	0.1895	+15	-61
B. A. C. 2919	7.3	4.57	11.5	20 2.0	2 39.7	+10 26.2	-0.2182	0.5409	0.1897	+31	-44
ϵ Cancri	7.2	+4.56	-11.5	+19 54.5	2 42.1	+10 28.5	-0.0950	0.5409	-0.1897	+38	-38
ϵ Cancri	7.1	4.57	11.5	20 5.1	2 49.5	+10 35.7	-0.3045	0.5409	0.1899	+27	-49
B. A. C. 2925	7.7	4.56	11.5	19 56.7	2 55.5	+10 41.5	-0.1760	0.5409	0.1902	+34	-42
B. A. C. 2931	7.5	4.56	11.7	20 14.5	3 20.0	+11 5.1	-0.5665	0.5409	0.1909	+12	-64
44 Cancri	8.3	+4.50	-11.3	+18 31.2	3 57.6	+11 41.6	+1.1310	0.5405	-0.1921	+90	+31
δ Cancri	4.0	4.49	11.7	18 32.0	4 40.4	-11 37.1	+0.9795	0.5401	0.1932	+90	+20
68 Cancri	7.5	4.36	12.9	17 29.1	12 35.7	-3 57.6	+0.4957	0.5371	0.2068	+74	-10
71 Cancri	8.0	4.35	13.4	17 48.1	14 28.5	-2 8.5	-0.2293	0.5364	0.2099	+31	-47
B. A. C. 3103	7.5	+4.34	-13.4	+17 31.7	14 42.7	-1 54.8	+0.0070	0.5363	-0.2104	+44	-35
78 Cancri	7.8	4.33	13.8	17 53.2	16 0.5	-0 39.6	-0.6419	0.5359	0.2123	+9	-71
7 Leonis	6.1	4.07	15.3	14 50.3	28 4 43.7	+11 38.8	-0.2713	0.5315	0.2309	+29	-52
11 Leonis	6.8	4.05	15.6	14 48.7	5 45.1	-11 21.9	-0.4796	0.5313	0.2321	+18	-65
ψ Leonis	6.0	+4.02	-15.8	+14 29.5	8 28.3	-8 43.9	-0.7825	0.5306	-0.2357	+2	-69
18 Leonis	6.0	3.94	15.4	12 17.0	9 46.0	-7 28.7	+1.2090	0.5299	0.2372	+90	+31
21 Leonis	6.8	3.95	16.2	12 19.4	11 53.4	-5 25.3	+0.6601	0.5295	0.2400	+88	-5
23 Leonis	6.3	3.95	16.3	13 32.8	11 58.5	-5 20.6	-0.6306	0.5295	0.2400	+10	-74
ν Leonis	5.3	+3.89	-16.6	+12 56.1	15 26.1	-1 59.5	-0.8337	0.5285	-0.2441	-1	-77
A Leonis	4.7	3.78	16.6	10 30.1	20 7.4	+2 32.8	+0.5332	0.5277	0.2490	+76	-13
44 Leonis	6.0	3.66	17.2	9 18.5	27 4 30.8	+10 40.1	-0.3574	0.5264	0.2570	+25	-61
48 Leonis	5.5	3.57	17.5	7 29.0	9 9.5	-8 50.0	+0.3188	0.5261	0.2607	+61	-25
35 ¹ Sextantis	6.2	+3.49	-17.4	+5 23.2	13 18.3	-4 49.0	+1.1850	0.5261	-0.2638	+90	+48
37 Sextantis	6.3	3.50	18.0	6 55.0	14 38.0	-3 31.9	-0.5368	0.5260	0.2648	+15	-75
38 Sextantis	7.8	3.49	18.0	6 53.4	15 13.7	-2 57.3	-0.6682	0.5261	0.2651	+9	-83
α Leonis	5.3	3.38	17.9	4 10.2	21 39.6	+3 16.4	+0.3987	0.5262	0.2688	+66	-22
ρ^1 Leonis	6.2	+3.30	-17.7	+2 30.9	28 0 45.6	+6 16.5	+1.2520	0.5266	-0.2704	+90	-30
75 Leonis	5.7	3.27	18.4	2 34.6	5 45.2	+11 6.6	-0.1663	0.5271	0.2726	+35	-52
76 Leonis	6.3	3.25	18.3	2 12.9	6 32.6	+11 52.5	-0.0153	0.5274	0.2727	+43	-44
79 Leonis	6.0	3.22	18.4	+1 58.4	9 0.7	-9 44.1	-0.4423	0.5281	0.2733	+21	-69
ν Leonis	4.4	+3.12	-18.1	-0 15.3	15 12.8	-3 43.9	+0.1216	0.5293	-0.2745	+50	-37
χ Virginis	5.2	2.77	17.9	7 25.7	29 20 23.8	+0 29.5	-0.6205	0.5426	0.2679	+9	-83
ψ Virginis	5.2	2.71	17.8	8 58.8	30 3 13.5	+7 5.4	-0.8802	0.5469	0.2631	-6	-90
δ Virginis	5.9	2.66	17.6	10 11.4	9 15.2	-11 5.4	-1.2440	0.5509	0.2576	-33	-90
i Virginis	5.7	+2.59	-17.3	-12 10.3	17 28.9	-3 9.1	-1.3530	0.5572	-0.2486	-49	-90
75 Virginis	6.0	+2.58	-16.7	-14 50.0	20 6.5	-0 37.2	+0.6439	0.5594	-0.2453	+74	-9

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
		α	δ	α	d h m	h m							
83 Virginis	6.0	+2.55	-16.5	-15 39.7	1 1 3.4	+ 4 8.9	+0.2678	0.5631	-0.2383	+51	-29		
85 Virginis	6.5	2.55	16.6	15 15.0	1 31.4	+ 4 35.9	-0.2513	0.5639	0.2377	+24	-58		
B. A. C. 4722	5.8	2.50	15.9	17 43.2	13 52.8	- 7 30.4	-0.6183	0.5740	0.2168	+ 3	-85		
B. A. C. 4923	7.3	2.54	16.4	20 56.9	2 6 32.2	+ 8 30.0	-0.7525	0.5879	0.1809	- 9	-90		
42 Libræ	5.7	2.47	13.6	23 29.0	22 53.0	+ 0 10.8	-0.8620	0.6001	0.1374	-20	-90		
B. A. C. 5197	6.0	+2.49	-13.3	-24 23.6	3 0 56.5	+ 2 9.2	-0.2390	0.6010	-0.1314	+13	-58		
NEW MOON.													
B. A. C. 6194	5.1	2.83	5.9	27 4.7	5 8 38.0	+ 7 27.9	+0.0890	0.6016	+0.0497	+23	-38		
♄ Sagittarii	3.7	2.93	3.9	27 6.0	19 13.2	- 6 32.9	+0.8056	0.5916	0.0821	+63	+ 4		
♄ Sagittarii	2.3	+2.94	- 3.5	-26 25.6	22 45.7	- 2 59.4	+0.4484	0.5912	+0.0929	+47	-18		
♄ Sagittarii	5.4	2.98	1.9	25 26.1	6 6 42.2	+ 4 38.0	+0.2669	0.5837	0.1149	+38	-28		
♄ Sagittarii	5.4	3.01	1.1	24 42.6	10 35.6	+ 8 22.3	-0.0068	0.5806	0.1251	+25	-44		
♄ Sagittarii	6.3	3.00	1.0	24 37.0	10 38.2	+ 8 24.7	-0.0971	0.5805	0.1252	+20	-48		
♄ Sagittarii	5.6	2.99	0.9	24 10.0	10 41.7	+ 8 28.2	-0.5489	0.5805	0.1253	- 3	-81		
♄ Sagittarii	5.7	+3.05	- 0.3	-24 56.8	14 55.9	-11 27.5	+0.8032	0.5759	+0.1360	+65	+ 3		
♄ Sagittarii	4.7	3.05	- 0.2	25 6.8	15 12.1	-11 11.9	+1.0120	0.5759	0.1366	+65	+17		
53 Sagittarii	6.7	3.03	+ 0.3	23 39.9	16 30.2	- 9 56.8	-0.2925	0.5748	0.1397	+11	-61		
B. A. C. 6727	6.2	3.03	0.3	23 40.0	16 37.4	- 9 49.9	-0.2775	0.5745	0.1402	+13	-60		
VENUS				23 25.5	20 35.6	- 6 0.7	+0.0515	0.5192	0.1407	+31	-40		
4 Capricorni	6.1	+3.13	+ 3.5	-22 7.8	7 8 36.1	+ 5 33.5	+0.6671	0.5577	+0.1748	+67	- 6		
19 Capricorni	6.1	3.17	7.3	18 18.9	8 1 6.4	- 2 30.5	-0.1833	0.5403	0.2027	+25	-54		
21 Capricorni	6.4	3.19	8.0	17 56.1	3 55.2	+ 0 12.6	-0.0053	0.5380	0.2069	+35	-44		
♄ Capricorni	4.1	3.21	8.5	17 38.7	6 17.7	+ 2 30.4	+0.1841	0.5353	0.2102	+45	-33		
29 Capricorni	5.7	3.21	9.8	15 36.1	10 58.1	+ 7 1.7	-0.9725	0.5311	0.2163	-16	-90		
42 Capricorni	5.6	+3.28	+11.8	-14 30.5	23 34.2	- 4 46.0	+0.6823	0.5196	+0.2299	+75	- 7		
44 Capricorni	6.1	3.30	12.1	14 52.3	9 0 19.1	- 4 2.6	+1.2420	0.5193	0.2305	+75	+34		
50 Capricorni	6.9	3.26	13.0	12 10.3	2 9.9	- 2 15.2	-1.2050	0.5177	0.2322	-31	-90		
♄ Aquarii	6.8	3.36	15.1	11 19.7	14 20.5	+ 9 33.6	+0.7794	0.5082	0.2415	+73	- 2		
B. A. C. 7740	7.0	3.38	15.1	11 34.5	15 15.4	+10 26.9	+1.2650	0.5077	0.2419	+78	+33		
B. A. C. 7774	6.7	+3.35	+16.0	- 9 33.2	17 40.5	-11 12.3	-0.3189	0.5063	+0.2436	+24	-61		
♄ Aquarii	5.6	3.34	16.7	8 20.3	19 25.6	- 9 30.2	-1.1980	0.5049	0.2446	-28	-90		
67 Aquarii	6.4	3.43	18.5	7 30.1	10 7 43.5	+ 2 26.7	+0.9419	0.4979	0.2500	+82	+ 7		
B. A. C. 7986	5.9	3.47	19.8	5 32.2	14 14.1	+ 8 46.3	+0.4471	0.4952	0.2519	+68	-20		
B. A. C. 7993	6.6	3.47	20.0	5 21.7	15 23.4	+ 9 53.7	+0.5470	0.4946	0.2520	+77	-15		
B. A. C. 8017	6.1	+3.49	+20.2	- 5 16.0	17 42.9	-11 50.6	+1.0300	0.4937	+0.2525	+85	+13		
12 Piscium	6.8	3.60	22.7	1 36.1	11 9 16.1	+ 3 17.0	+0.9761	0.4891	0.2534	+88	+ 9		
13 Piscium	6.4	3.60	22.8	- 1 39.2	10 38.4	+ 4 37.1	+1.3810	0.4888	0.2533	+88	+45		
15 Piscium	6.6	3.59	23.9	+ 0 44.7	12 37.3	+ 6 32.8	-0.7435	0.4887	0.2532	+ 5	-84		
♄ Piscium	4.5	3.62	24.2	1 12.9	16 19.1	+10 8.7	-0.3256	0.4879	0.2528	+27	-62		
22 Piscium	5.0	+3.67	+25.1	+ 2 21.5	21 53.5	- 8 25.9	-0.1741	0.4875	+0.2518	+34	-52		
25 Piscium	6.4	3.69	24.8	1 31.1	22 31.2	- 7 49.3	+0.9074	0.4873	0.2517	+90	+ 5		
45 Piscium	6.9	3.85	27.4	7 7.4	12 16 52.9	+10 3.0	-0.7015	0.4871	0.2452	+ 7	-83		
51 Piscium	5.8	3.89	27.2	6 23.3	20 38.3	-10 17.7	+1.0300	0.4889	0.2436	+90	+15		
75 Piscium	6.0	4.10	29.3	12 24.4	18 15 34.3	+ 8 7.3	-1.1310	0.4941	0.2313	-21	-78		
♄ Piscium	3.7	+4.29	+29.7	+14 49.1	14 5 4.9	- 2 44.7	-0.7577	0.4997	+0.2194	+ 3	-73		
101 Piscium	6.3	4.33	29.6	14 8.3	7 23.1	- 0 30.4	+0.4990	0.5008	0.2172	+74	-12		
103 Piscium	6.8	4.36	30.1	16 6.4	9 13.5	+ 1 16.9	-1.2860	0.5016	0.2153	-37	-74		
104 Piscium	7.5	4.35	29.4	13 46.0	9 14.7	+ 1 18.0	+1.3120	0.5016	0.2153	+90	+44		
105 Piscium	6.3	4.37	30.0	15 53.2	9 26.9	+ 1 29.9	-0.9922	0.5017	0.2149	-12	74		
3 Arietis	6.0	+4.42	+30.1	+16 54.0	13 6.2	+ 5 3.0	-1.3400	0.5037	+0.2110	-45	-73		
4 Arietis	5.7	4.43	29.9	16 26.8	13 57.0	+ 5 52.3	-0.6560	0.5042	0.2101	+ 8	-73		
B. A. C. 549	8.2	4.43	29.9	16 30.6	14 2.4	+ 5 57.5	-0.7078	0.5042	0.2101	+ 5	-74		
♄ Arietis	5.7	4.50	29.8	17 19.1	18 45.3	+10 32.2	-0.6263	0.5069	0.2045	+10	-70		
15 Arietis	5.7	4.62	29.7	19 1.1	15 1 36.6	- 6 48.6	-1.1370	0.5107	0.1961	-24	-71		
B. A. C. 686	7.2	+4.64	+29.6	+19 8.1	3 16.4	- 5 11.8	-0.9417	0.5118	+0.1938	-10	-71		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0. "		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
		α	δ	α	d h m	h m					α		
θ Arietis	5.7	+4.67	+29.4	+19 25.7	15 5 27.1	- 3 4.9	-0.8472	0.5133	+0.1908	- 4	-71		
23 Arietis	7.3	4.68	29.1	19 13.2	5 58.4	- 2 34.6	-0.5168	0.5136	0.1901	+15	-62		
26 Arietis	6.0	4.76	28.8	19 24.1	11 46.6	+ 3 3.1	+0.3615	0.5171	0.1819	+65	-15		
ν Arietis	5.7	4.87	28.6	21 31.2	15 50.2	+ 6 59.3	-1.1550	0.5198	0.1756	-38	-68		
μ Arietis	6.0	4.86	28.0	19 34.6	17 37.5	+ 8 43.3	+1.2070	0.5211	0.1729	+90	-40		
B. A. C. 920	7.0	+5.00	+27.1	+21 12.7	16 1 41.7	- 7 27.6	+0.7399	0.5265	+0.1596	+90	+ 9		
ϵ Arietis	4.6	5.00	27.1	20 56.0	1 51.7	- 7 18.0	+1.0750	0.5267	0.1594	+90	+30		
64 Arietis	5.7	5.24	25.7	24 21.7	13 47.7	+ 4 15.1	-0.9328	0.5346	0.1375	-11	-66		
7 Tauri	6.0	5.29	24.7	24 7.3	18 32.9	+ 8 50.9	-0.0367	0.5379	0.1281	+41	-28		
11 Tauri	6.7	5.38	24.2	25 0.0	21 28.1	+11 40.3	-0.6377	0.5399	0.1223	+ 8	-62		
γ Pleiadum	6.3	+5.37	+23.6	+23 58.1	23 20.9	-10 30.6	+0.7218	0.5409	+0.1181	+90	+11		
17 Tauri	4.3	5.36	23.6	23 47.6	23 23.0	-10 28.6	+0.9198	0.5412	0.1181	+90	+24		
18 Tauri	6.3	5.39	23.6	24 31.2	23 29.9	-10 21.9	+0.1338	0.5412	0.1180	+51	-19		
19 Tauri	5.0	5.38	23.5	24 8.8	23 31.9	-10 19.9	+0.5496	0.5414	0.1180	+81	+ 3		
20 Tauri	5.0	5.38	23.4	24 2.9	23 49.0	-10 3.4	+0.6905	0.5414	0.1172	+90	+10		
21 Tauri	7.0	+5.38	+23.4	+24 14.2	23 51.1	-10 1.4	+0.4872	0.5414	+0.1172	+76	0		
22 Tauri	7.0	5.38	23.4	24 12.6	23 55.0	- 9 57.7	+0.5238	0.5416	0.1170	+79	+ 1		
23 Tauri	4.7	5.39	23.4	23 37.9	17 0 3.3	- 9 49.6	+1.1760	0.5416	0.1169	+90	+44		
24 Tauri	8.0	5.38	23.3	23 48.0	0 31.4	- 9 22.4	+1.0450	0.5419	0.1157	+90	+33		
η Tauri	3.1	5.38	23.3	23 47.4	0 35.0	- 9 18.9	+1.0620	0.5419	0.1155	+90	+34		
B. A. C. 1171	7.8	+5.40	+23.2	+24 1.9	1 2.7	- 8 52.1	+0.8496	0.5420	+0.1147	+90	+22		
27 Tauri	4.0	5.39	23.1	23 44.5	1 21.3	- 8 34.2	+1.2050	0.5423	0.1140	+90	+47		
28 Tauri	6.2	5.39	23.1	23 49.5	1 21.9	- 8 33.6	+1.1140	0.5423	0.1140	+90	+39		
B. A. C. 1192	6.0	5.43	23.2	25 16.3	1 51.1	- 8 5.4	-0.4210	0.5424	0.1129	+20	-48		
ρ Tauri	6.0	5.58	21.2	26 13.0	11 8.3	+ 0 52.9	-0.5003	0.5483	0.0924	+15	-51		
ϕ Tauri	5.3	+5.66	+20.2	+27 6.4	15 22.8	+ 4 58.6	-1.1040	0.5505	+0.0826	-27	-63		
χ Tauri	5.7	5.62	19.8	25 23.3	16 24.1	+ 5 57.8	+0.8606	0.5511	0.0802	+90	+24		
W. iv, 1421	6.0	5.92	14.2	27 54.2	18 12 57.2	+ 1 47.3	-0.7536	0.5603	+0.0292	- 1	-62		
136 Tauri	5.3	6.01	8.2	27 35.3	19 7 35.9	- 4 14.5	-0.3222	0.5644	-0.0202	+25	-34		
ϵ Geminorum	3.2	5.95	+ 0.8	25 14.0	20 5 9.7	- 7 27.9	+1.1560	0.5639	0.0772	+90	+46		
37 Geminorum	6.3	+5.94	- 0.9	+25 30.3	10 1.2	- 2 47.0	+0.4583	0.5627	-0.0897	+74	+ 1		
39 Geminorum	6.3	5.97	1.4	26 13.0	11 30.0	- 1 21.4	-0.4385	0.5626	0.0934	+18	-47		
40 Geminorum	6.3	5.97	1.5	26 3.3	11 47.1	- 1 4.9	-0.2923	0.5611	0.0941	+27	-38		
49 Geminorum	7.2	5.96	3.6	25 55.2	17 31.7	+ 4 27.4	-0.6226	0.5604	0.1085	+ 8	-64		
B. A. C. 2363	7.3	5.91	3.7	24 53.3	18 14.8	+ 5 8.9	+0.4001	0.5603	0.1103	+69	- 5		
52 Geminorum	6.3	+5.91	- 3.8	+25 3.8	18 21.1	+ 5 15.0	+0.2028	0.5603	-0.1106	+56	-14		
κ Geminorum	3.7	5.82	8.0	24 38.7	21 7 17.5	- 6 14.4	-1.0810	0.5560	0.1413	-23	-65		
82 Geminorum	6.3	5.75	8.4	23 23.8	9 7.1	- 4 30.6	-0.0248	0.5552	0.1452	+42	-29		
84 Geminorum	6.8	5.67	8.9	22 35.9	11 5.8	- 2 36.1	+0.5304	0.5546	0.1497	+78	- 1		
7 Cancri	6.3	5.67	10.3	22 21.5	15 53.3	+ 2 1.3	+0.0424	0.5526	0.1601	+46	-27		
μ^1 Cancri	6.3	+5.66	-10.7	+22 55.7	16 58.2	+ 3 3.0	-0.7357	0.5522	-0.1623	+ 2	-67		
B. A. C. 2703	7.5	5.66	10.8	22 45.2	17 5.9	+ 3 11.4	-0.5716	0.5521	0.1625	+12	-61		
μ^2 Cancri	5.7	5.63	10.9	21 52.8	17 38.2	+ 3 42.6	+0.2663	0.5520	0.1637	+59	-16		
B. A. C. 2788	6.0	5.56	12.4	21 4.3	23 16.4	+ 9 9.0	+0.1637	0.5493	0.1753	+53	-23		
η Cancri	5.4	5.50	13.9	20 47.5	22 4 51.7	- 9 27.2	-0.5498	0.5466	0.1860	+14	-62		
35 Cancri	6.3	+5.46	-14.0	+19 56.6	6 3.6	- 8 17.7	+0.1194	0.5461	-0.1882	+50	-26		
B. A. C. 2899	7.2	5.41	14.4	19 37.6	7 10.9	- 7 12.7	+0.2404	0.5455	0.1904	+57	-20		
B. A. C. 2907	8.8	5.43	14.6	19 57.2	7 48.2	- 6 36.7	-0.2211	0.5450	0.1914	+42	-44		
38 Cancri	7.0	5.43	14.7	20 8.5	8 3.2	- 6 22.2	-0.4085	0.5449	0.1920	+18	-58		
B. A. C. 2914	7.2	5.42	14.7	19 54.2	8 7.1	- 6 18.5	-0.2298	0.5449	0.1922	+31	-45		
39 Cancri	7.0	+5.43	-14.8	+20 22.3	8 13.8	- 6 11.9	-0.7439	0.5449	-0.1923	+ 2	-69		
40 Cancri	7.3	5.43	14.8	20 20.1	8 16.2	- 6 9.6	-0.7124	0.5449	0.1923	+ 4	-70		
B. A. C. 2919	7.3	5.42	14.8	20 2.0	8 21.1	- 6 4.9	-0.4123	0.5449	0.1925	+21	-55		
ϵ Cancri	7.2	5.41	14.8	19 54.5	8 23.6	- 6 2.5	-0.2877	0.5448	0.1927	+28	-48		
ϵ Cancri	7.1	5.42	14.8	20 5.1	8 30.9	- 5 55.5	-0.4983	0.5448	0.1928	+16	-60		
B. A. C. 2925	7.7	+5.41	-14.9	+19 56.7	8 36.9	- 5 49.7	-0.3701	0.5446	-0.1930	+23	-52		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1896.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
B. A. C. 2931	7.5	+5.42	-15.0	+20 14.5	22 9 1.2	- 5 26.2	-0.7593	0.5445	-0.1937	+ 2	-67		
44 Cancr	8.3	5.35	14.8	18 31.2	9 38.4	- 4 50.2	+0.9268	0.5444	0.1948	+90	+17		
d Cancr	4.0	5.34	15.1	18 32.0	10 20.9	- 4 9.2	+0.7784	0.5441	0.1962	+90	+ 7		
68 Cancr	7.5	5.24	16.7	17 29.0	18 12.6	+ 3 26.7	+0.2849	0.5403	0.2094	+60	-21		
71 Cancr	8.0	5.25	17.3	17 48.0	20 4.6	+ 5 15.0	-0.4403	0.5395	0.2124	+19	-60		
B. A. C. 3103	7.5	+5.22	-17.3	+17 31.6	20 18.7	+ 5 28.6	-0.2044	0.5394	-0.2128	+32	-46		
78 Cancr	7.8	5.23	17.7	17 53.1	21 36.1	+ 6 43.3	-0.8555	0.5387	0.2148	- 4	-72		
7 Leonis	6.1	4.96	19.9	14 50.3	23 10 16.1	- 5 1.5	-0.5042	0.5333	0.2327	+17	-66		
11 Leonis	6.8	4.95	20.2	14 48.7	11 17.4	- 4 2.2	-0.7144	0.5328	0.2340	+ 5	-75		
ψ Leonis	6.0	4.92	20.7	14 29.5	14 0.3	- 1 24.6	-1.0200	0.5318	0.2373	-13	-76		
18 Leonis	6.0	+4.85	-20.3	+12 16.9	15 18.0	- 0 9.4	+0.9736	0.5315	-0.2389	+90	+14		
19 Leonis	7.0	4.83	20.3	12 2.6	15 48.2	+ 0 19.4	+1.1000	0.5309	0.2395	+90	+22		
B. A. C. 3345	8.0	4.83	20.3	11 54.3	15 51.8	+ 0 23.3	+1.2300	0.5308	0.2395	+90	+33		
21 Leonis	6.8	4.86	21.0	12 19.3	17 25.3	+ 1 53.9	+0.4215	0.5307	0.2413	+68	-18		
23 Leonis	6.3	4.86	21.1	13 32.7	17 30.6	+ 1 59.0	-0.8724	0.5307	0.2414	- 4	-76		
ν Leonis	5.3	+4.81	-21.6	+12 56.0	20 58.0	+ 5 19.7	-1.0770	0.5294	-0.2451	-17	-77		
A Leonis	4.7	4.69	21.9	10 30.0	24 1 40.0	+ 9 52.8	+0.2872	0.5277	0.2500	+ 9	26		
44 Leonis	6.0	4.58	22.9	9 18.4	10 5.5	- 5 57.7	-0.6124	0.5259	0.2573	+12	77		
48 Leonis	5.5	4.48	23.0	7 28.9	14 46.0	- 1 26.1	+0.0637	0.5250	0.2607	+47	-38		
35 ¹ Sextantis	6.2	4.41	23.0	5 17.1	18 56.9	+ 2 37.0	+1.2340	0.5242	0.2635	+90	+29		
37 Sextantis	6.3	+4.42	-23.7	+ 6 54.9	20 17.5	+ 3 55.0	-0.8011	0.5241	-0.2642	+ 1	-71		
38 Sextantis	7.8	4.41	23.7	6 53.3	20 53.5	+ 4 29.9	-0.9317	0.5241	0.2647	- 6	-83		
d Leonis	5.3	4.30	23.8	4 10.1	25 3 23.6	+10 47.8	+0.1390	0.5237	0.2679	+51	-35		
ρ Leonis	6.2	4.22	23.7	2 30.8	6 32.0	-10 9.7	+0.9991	0.5236	0.2690	+90	+10		
75 Leonis	5.7	4.19	24.3	2 34.5	11 36.0	- 5 15.3	-0.4346	0.5236	0.2705	+21	68		
76 Leonis	6.3	+4.17	-24.2	+ 2 12.8	12 24.1	- 4 28.7	-0.2771	0.5236	-0.2706	+29	58		
79 Leonis	6.0	4.14	24.4	+ 1 58.3	14 54.7	- 2 2.8	-0.7092	0.5238	0.2712	+ 6	88		
ν Leonis	4.4	4.05	24.1	- 0 15.4	21 13.4	+ 4 4.1	-0.1381	0.5246	0.2719	+36	-51		
η Virginis	5.7	3.70	23.0	8 53.1	27 0 31.9	+ 6 30.3	+1.2900	0.5350	0.2656	+81	+34		
χ Virginis	5.2	3.68	23.4	7 25.8	3 6.4	+ 8 59.7	-0.8742	0.5359	0.2631	- 5	-90		
ψ Virginis	5.2	+3.61	-23.1	- 8 58.9	10 8.1	- 8 12.4	-1.1280	0.5383	-0.2580	-22	-90		
75 Virginis	6.0	3.46	21.2	14 50.1	28 3 33.2	+ 8 37.2	+0.4457	0.5494	0.2398	+63	-20		
83 Virginis	6.0	3.44	20.8	15 39.8	8 40.0	-10 26.8	+0.0722	0.5534	0.2328	+41	-39		
85 Virginis	6.5	3.43	20.9	15 15.1	9 8.9	- 9 58.0	-0.4535	0.5538	0.2321	+16	-71		
B. A. C. 4722	5.8	3.35	19.7	17 43.2	21 55.6	+ 2 20.2	-0.8061	0.5637	0.2113	- 8	-90		
B. A. C. 4923	7.3	+3.22	-19.2	-20 57.0	29 15 8.5	- 5 5.8	-0.9069	0.5780	-0.1760	-18	-90		
42 Libræ	5.7	3.23	15.2	23 29.0	30 8 0.2	+11 5.9	-0.9833	0.5903	0.1332	-28	-90		
B. A. C. 5197	6.0	3.24	14.7	24 23.6	10 7.4	-10 52.0	-0.3460	0.5917	0.1274	+ 8	-65		
δ Scorp	5.3	3.24	14.2	25 26.3	12 4.8	- 8 59.4	+0.4581	0.5928	0.1219	+50	18		
A ¹ Scorp	5.2	3.23	14.2	25 1.2	13 5.6	- 8 1.2	-0.0819	0.5934	0.1189	+20	48		
B. A. C. 5253	5.8	+3.22	-14.4	-24 13.6	13 12.9	- 7 54.1	-0.8928	0.5936	-0.1185	-23	-90		
B. A. C. 5255	6.0	3.23	14.1	25 6.3	13 19.2	- 7 48.1	-0.0234	0.5936	0.1182	+23	-44		
3 Scorp	6.7	3.23	14.2	24 56.3	13 29.7	- 7 38.0	-0.2123	0.5936	0.1179	+14	-56		
π Scorp	6.3	3.24	13.9	25 57.8	13 48.0	- 7 20.4	+0.7791	0.5939	0.1169	+64	+ 1		
μ Scorp	3.4	3.24	13.8	25 49.1	15 4.6	- 6 7.0	+0.4882	0.5946	0.1132	+51	-16		
B. A. C. 5314	5.7	+3.23	-13.6	-25 34.7	16 47.3	- 4 28.5	+0.0569	0.5967	-0.1081	+26	-40		
B. A. C. 5347	6.0	3.24	13.2	26 3.0	18 35.0	- 2 45.2	+0.3412	0.5968	0.1028	+41	-24		
σ Scorp	3.4	3.21	12.8	25 20.8	23 31.0	+ 1 58.5	+0.8366	0.5991	0.0880	+23	-90		
τ Scorp	1.2	3.22	12.2	26 12.3	31 2 34.8	+ 4 54.7	-0.2293	0.6002	0.0785	+ 9	57		
B. A. C. 5800	7.5	+3.19	- 9.5	-26 51.8	19 12.4	- 3 9.7	-0.4311	0.6039	-0.0250	- 6	-72		

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1896.

Date.	THE STAR'S		IMMERSION.				EMERSION.				Duration of Oc- cultation.		
			Washington.		Angle from		Washington.		Angle from				
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.			
			h m	h m	°	°	h m	h m	°	°	h m		
Jan.	2	80 Cancrī	6.8	4 10	10 1	91	146	4 55	11 5	311	4	1 4	
	3	α Leonis	1.3	5 34	10 41	101	154	6 37	11 44	313	3	1 3	
	4	56 Leonis *	6.6	3 32	8 35	50	98	3 55	8 58	358	47	1 23	
	6	χ Virginis*	5.2	5 12	10 7	192	243	5 24	10 19	221	272	0 12	
	7	83 Virginis	6.0	12 30	17 20	173	188	13 24	18 14	259	263	0 54	
	19	21 Piscium *	5.8	6 6	10 10	9	318	6 40	10 44	297	247	0 34	
	23	B. A. C. 920 *	7.0	11 4	14 52	94	46	11 52	15 39	225	190	0 47	
	24	7 Tauri	6.0	1 57	5 41	16	63	1 52	6 37	291	316	0 56	
	24	18 Tauri	6.3	8 15	11 59	95	37	9 18	13 2	253	198	1 3	
	26	136 Tauri †	5.3	12 44	16 20	93	44	13 34	17 9	284	240	0 49	
	28	κ Geminorum	3.7	6 11	9 40	156	204	7 1	10 29	234	259	0 49	
	30	ν Leonis	5.3	14 40	17 59	80	27	15 21	18 40	341	288	0 41	
	31	49 Leonis	6.0	4 6	7 23	87	138	4 55	8 12	322	14	0 49	
	31	38 Sextantis	7.8	11 41	14 57	106	86	12 47	16 2	333	297	1 5	
	Feb.	15	14 Piscium *	5.9	5 45	8 2	86	35	6 36	8 54	220	170	0 52
19		26 Arietis	6.0	7 7	9 8	50	354	8 8	10 10	179	125	1 2	
21		ρ Tauri	6.0	4 58	6 52	33	355	6 2	7 56	302	247	1 4	
22		W. iv, 1421	6.0	5 33	7 23	109	81	6 55	8 45	246	188	1 22	
24		A Geminorum	5.7	12 58	14 6	175	118	13 23	14 30	226	171	0 24	
25		η Cancrī *	5.4	15 55	17 32	151	105	16 31	18 8	251	208	0 36	
26		80 Cancrī	6.8	5 26	7 1	86	36	6 30	8 4	320	266	1 3	
27		α Leonis	1.3	5 19	6 49	82	133	6 9	7 40	331	18	0 51	
27		44 Leonis	6.0	15 37	17 5	151	99	16 23	17 52	270	219	0 47	
28		75 Leonis	5.7	14 33	15 58	174	130	15 15	16 40	257	210	0 42	
28		79 Leonis *	6.0	17 28	18 53	87	36	18 11	19 36	328	278	0 43	
Mar.		4	4 Scorpii	6.3	11 41	12 47	91	134	12 42	13 48	317	352	1 1
		9	17 Capricorni †	6.0	15 34	16 20	124	173	16 21	17 7	208	252	0 47
		21	136 Tauri	5.3	10 5	10 5	156	95	10 42	10 42	226	167	0 37
		22	39 Geminorum	6.3	12 51	12 46	137	83	13 38	13 33	257	206	0 47
	22	40 Geminorum	6.3	13 23	13 18	174	122	13 43	13 38	219	169	0 20	
	23	κ Geminorum	3.7	5 31	5 24	149	203	6 31	6 23	240	280	0 59	
	25	23 Leonis	6.3	13 0	12 44	140	90	14 0	13 43	207	154	0 59	
	26	49 Leonis	6.0	5 53	5 33	87	138	6 47	6 28	331	20	0 55	
	26	37 Sextantis	6.3	13 13	12 53	138	98	14 17	13 56	295	248	1 3	
	26	38 Sextantis	7.8	13 47	13 26	104	60	14 44	14 24	327	278	0 58	
	April	1	τ Scorpii	3.2	14 26	13 41	137	160	15 46	15 2	257	266	1 21
		5	B. A. C. 7049	6.5	15 29	14 29	42	90	16 27	15 27	293	335	0 58
		7	MARS †		15 57	14 48	56	108	17 5	15 56	260	309	1 8
		15	19 Tauri	5.0	10 19	8 40	122	72	11 4	9 25	228	181	0 45
		15	18 Tauri	6.3	10 32	8 53	21	332	10 56	9 17	329	281	0 24
15		21 Tauri †	7.0	10 34	8 56	102	53	11 16	9 37	248	204	0 41	
15		22 Tauri †	7.0	10 39	9 0	109	60	11 27	9 48	241	197	0 48	
20		η Cancrī	5.4	12 58	10 59	143	87	13 10	11 51	271	216	0 52	
20		39 Geminorum *	6.3	16 3	14 4	57	12	16 31	14 32	345	302	0 28	
20		40 Geminorum *	6.3	16 3	14 4	67	21	16 37	14 37	336	293	0 33	
22		44 Leonis	6.0	15 25	13 17	118	66	16 20	14 12	302	251	0 55	
23		75 Leonis	5.7	15 23	13 11	134	86	16 21	14 10	291	241	0 59	
23		76 Leonis	6.3	16 24	14 13	154	104	17 10	14 59	265	214	0 46	
28		4 Scorpii †	6.3	10 38	8 12	172	221	11 9	8 40	232	279	0 28	
May		30	B. A. C. 6127	5.1	12 47	10 8	83	133	13 47	11 9	291	335	1 1
	18	71 Cancrī	8.0	10 56	7 7	179	135	11 37	7 49	247	197	0 42	
	19	ν Leonis	5.3	9 52	5 59	78	78	10 41	6 49	357	337	0 50	
	23	75 Virginis	6.0	14 36	10 27	173	157	15 25	11 16	254	228	0 49	
	June	7	μ Arietis *	6.0	18 53	13 44	73	118	19 44	14 35	241	284	0 51
13		7 Cancrī *	6.3	15 21	9 49	113	66	16 8	10 36	285	244	0 47	
28		μ Capricorni *	5.2	15 31	9 1	2	55	15 53	9 23	319	11	0 22	
July	30	11 Piscium	6.4	19 58	13 18	73	118	21 12	14 33	213	248	1 15	
	30	13 Piscium	6.4	22 27	15 48	37	55	23 52	17 12	239	231	1 24	
	3	104 Piscium	7.5	20 22	13 31	84	137	21 21	14 29	215	268	0 58	
4	26 Arietis	6.0	0 4	17 8	178	228	0 45	17 50	295	341	0 42		

NOTE. The angles of position are counted from the north point and vertex of the moon's limb, toward the east.
 * Whole occultation below the horizon of Washington. † Immersion below the horizon of Washington.
 ‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1896.

Date.	THE STAR'S		IMMERSION.				EMERSION.				Duration of Oc- cultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
July 11	B. A. C. 3103 *	7.5	1 8	17 45	170	213	1 28	18 4	218	264	0 19
11	JUPITER		2 21	18 58	120	170	3 16	19 52	271	324	0 54
25	44 Capricorni	6.1	22 22	14 4	179	168	23 12	14 53	286	264	0 49
25	45 Capricorni	6.3	22 19	14 1	109	99	23 3	14 45	176	155	0 44
28	21 Piscium *	5.8	17 7	8 38	45	96	18 2	9 33	260	311	0 55
Aug. 2	g Pleiadum	6.5	20 35	11 46	118	167	21 11	12 22	203	255	0 36
2	19 Tauri	5.0	20 31	11 52	80	129	21 35	12 46	239	293	0 54
2	21 Tauri	7.0	21 0	12 11	73	124	21 56	13 6	225	280	0 55
2	20 Tauri	5.0	21 0	12 11	118	169	21 37	12 48	201	255	0 37
2	22 Tauri	7.0	21 3	12 14	81	132	21 58	13 8	237	292	0 54
16	7 Scorpii	3.2	18 13	8 30	124	103	19 21	9 37	242	209	1 7
21	31 Capricorni	6.7	16 45	6 41	55	101	17 56	7 53	263	294	1 12
21	1 Capricorni	4.4	19 55	9 51	13	31	20 55	10 51	284	290	1 0
22	4 Aquarii	5.6	20 32	10 24	49	71	21 57	11 50	237	238	1 26
22	B. A. C. 7740	7.0	22 27	12 19	14	9	23 35	13 26	266	246	1 7
23	B. A. C. 8017	6.1	2 3	15 50	57	16	3 13	17 0	212	165	1 10
24	13 Piscium *	6.4	16 47	6 32	7	58	17 28	7 3	301	352	0 31
24	14 Piscium †	5.9	17 31	7 16	110	161	18 12	7 57	192	242	0 41
29	7 Tauri	6.0	2 34	15 58	61	95	4 6	17 29	253	228	1 31
Sept. 2	A Geminorum	5.7	4 6	17 13	107	166	5 24	18 32	271	324	1 19
18	μ Capricorni	5.2	19 8	7 14	29	62	20 20	8 26	268	289	1 12
20	12 Piscium	6.8	1 54	13 52	54	17	3 10	15 7	233	187	1 15
24	26 Arietis	6.0	5 11	16 52	91	39	6 26	18 7	231	175	1 15
29	39 Geminorum	6.3	4 16	15 38	89	148	5 40	17 2	285	330	1 24
29	40 Geminorum	6.3	4 47	16 8	123	181	6 6	17 28	255	287	1 21
30	82 Geminorum	6.3	1 29	12 48	172	225	1 44	13 2	201	255	0 14
Oct 15	44 Capricorni	6.1	22 37	8 57	55	41	23 57	10 17	230	200	1 20
18	21 Piscium	5.8	18 34	4 43	54	105	19 38	5 46	243	290	1 3
22	B. A. C. 920	7.0	1 39	11 31	133	170	2 6	11 58	169	187	0 27
23	g Pleiadum	6.3	22 29	8 17	87	143	23 30	9 18	226	284	1 1
23	19 Tauri	5.0	22 58	8 36	57	114	23 54	9 42	256	314	1 6
23	20 Tauri	5.0	23 2	8 50	92	150	0 4	9 52	220	278	1 2
23	21 Tauri	7.0	23 11	8 59	53	111	0 18	10 6	259	313	1 7
23	22 Tauri	7.0	23 13	9 1	71	128	0 22	10 10	251	309	1 9
28	B. A. C. 2788 †	6.0	0 33	10 1	138	183	1 13	10 42	241	290	0 41
28	35 Cancrī	6.3	9 1	18 28	164	147	10 0	19 27	255	214	0 59
28	B. A. C. 2899	7.2	10 38	20 5	158	110	11 38	21 4	264	209	0 59
Nov. 9	4 Sagittarii	5.4	20 22	5 3	67	55	21 41	6 22	245	218	1 19
9	41 Sagittarii	7.4	20 26	5 7	15	3	21 15	5 57	299	272	0 50
12	B. A. C. 7740	7.0	21 57	6 27	99	102	22 53	7 23	183	171	0 56
19	19 Tauri	5.0	9 24	17 24	98	44	10 22	18 22	254	204	0 58
19	g Pleiadum	6.3	9 28	17 28	150	96	9 54	17 54	201	149	0 26
19	21 Tauri	7.0	9 44	17 44	80	26	10 41	18 41	273	224	0 57
19	20 Tauri	5.0	9 47	17 47	126	72	10 31	18 31	227	178	0 44
19	22 Tauri	7.0	9 51	17 48	87	33	10 48	18 45	266	217	0 47
19	B. A. C. 1171 †	7.8	11 3	19 3	146	98	11 30	19 30	207	163	0 27
23	B. A. C. 2363	7.3	2 38	10 24	126	185	3 39	11 25	242	301	1 1
23	52 Geminorum	6.3	2 39	10 24	85	144	3 51	11 36	284	343	1 12
24	7 Cancrī †	6.3	0 39	8 21	41	89	1 8	8 50	335	25	0 29
24	μ Cancrī	5.7	2 16	9 58	129	183	3 11	10 53	251	306	0 55
24	B. A. C. 2788	6.0	9 57	17 38	89	44	11 2	18 42	331	277	1 4
25	68 Cancrī	7.5	3 22	10 59	172	226	3 57	11 34	231	285	0 35
25	B. A. C. 3103	7.5	5 26	13 3	68	122	6 21	13 58	338	29	0 55
28	ν Leonis	4.4	5 48	13 13	99	150	6 43	14 8	321	11	0 55
Dec. 8	μ Capricorni	4.1	0 48	7 35	350	308	1 12	7 59	308	352	0 24
14	101 Piscium	6.3	23 55	6 19	54	90	1 22	7 45	232	236	1 26
15	26 Arietis	6.0	6 14	12 32	102	46	7 20	13 38	227	172	1 6
20	37 Geminorum	6.3	2 29	8 28	131	190	4 24	9 24	233	292	0 56
24	48 Leonis	5.5	7 29	13 12	75	120	8 17	14 0	355	33	0 48
24	35 Sextantis	6.2	14 21	20 2	165	118	15 10	20 52	263	213	0 50

NOTE -The angles of position are counted from the north point and vertex of the moon's limb, toward the east.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

DOWNES'S TABLE GIVING VALUES OF τ .

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

A		Lat. 72°			Lat. 66°			Lat. 60°			Lat. 54°			Lat. 48°			Lat. 42°			Lat. 36°		
		x'			x'			x'			x'			x'			x'			x'		
		.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	2	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	5	6	7
20	3	3	4	4	5	5	5	6	7	6	7	9	8	9	11	9	10	12	11	12	14	
30	5	5	6	6	7	8	8	9	11	10	11	13	12	13	16	14	16	18	16	18	22	
40	6	7	8	8	9	11	11	12	14	13	15	17	16	18	21	18	21	24	21	24	29	
50	7	8	10	10	11	13	13	15	17	16	19	21	19	22	26	22	26	30	26	30	36	
1	0	9	10	11	12	14	16	18	21	19	22	26	23	26	31	26	31	36	30	35	42	
10	10	12	13	14	16	18	18	21	24	22	26	30	26	30	36	31	35	42	35	40	48	
20	12	13	15	16	18	21	21	23	27	25	29	34	30	34	40	35	40	47	39	45	54	
30	13	15	17	18	20	23	23	26	30	28	32	37	33	38	45	39	44	52	43	50	59	
40	14	16	18	20	22	25	25	29	33	31	35	41	36	42	49	42	48	57	47	54	64	
50	16	18	20	21	24	28	27	31	36	34	38	44	39	45	53	45	52	61	51	58	68	
2	0	17	19	22	23	26	30	29	33	36	41	47	42	48	56	48	55	65	54	62	72	
10	18	20	23	25	28	32	31	36	41	38	43	50	45	51	59	51	59	68	57	66	76	
20	19	22	24	26	30	34	33	38	43	40	46	53	47	54	62	54	62	71	60	69	80	
30	20	23	26	28	31	36	35	40	45	42	48	55	50	56	65	57	64	74	63	72	83	
40	21	24	27	29	33	37	37	42	47	44	50	58	52	59	68	59	67	77	65	74	86	
50	22	25	28	30	34	39	38	43	49	46	52	60	54	61	70	61	69	79	68	76	88	
3	0	23	26	30	31	35	40	40	45	51	48	54	62	56	63	72	63	71	81	70	79	90
10	24	27	31	33	36	42	41	46	53	49	56	63	57	65	74	65	73	83	72	81	92	
20	25	28	32	34	38	43	42	47	54	51	57	65	59	66	75	66	74	85	73	82	93	
30	26	29	33	35	39	44	43	49	55	52	58	66	60	67	77	68	76	86	74	83	95	
40	26	29	33	36	40	45	44	50	56	53	59	67	61	69	78	69	77	87	75	84	96	
50	27	30	34	36	41	46	45	51	57	54	60	68	62	70	79	70	78	88	76	85	96	
4	0	28	31	35	37	41	47	46	52	55	61	69	63	70	79	71	79	89	77	86	97	
10	28	31	35	38	42	47	47	52	59	56	62	70	64	71	80	71	79	89	78	86	97	
20	29	32	36	38	42	48	47	53	59	56	62	70	64	71	80	72	80	89	78	87	97	
30	29	32	36	39	43	48	48	53	60	57	63	71	65	72	81	72	80	89	79	87	97	
40	29	33	37	39	43	49	48	53	60	57	63	71	65	72	81	72	80	89	79	87	97	
50	30	33	37	39	44	49	48	54	60	57	63	71	65	72	81	72	80	89	79	87	96	
5	0	30	33	37	39	44	49	49	54	60	57	63	71	65	72	80	72	80	89	78	86	95
10	30	33	37	40	44	49	49	54	60	57	63	71	65	72	80	72	79	88	78	86	95	
20	30	33	37	40	44	49	49	54	60	57	63	71	65	71	79	72	79	88	78	85	94	
30	30	33	37	40	44	49	49	54	60	57	63	70	64	71	79	71	78	87	77	85	93	
40	30	33	37	39	44	49	48	53	59	56	62	70	64	70	78	70	77	86	76	84	91	
50	30	33	37	39	43	48	48	53	59	56	61	69	63	70	77	70	77	85	75	83	90	
6	0	30	33	37	39	43	48	52	58	55	61	68	63	69	76	69	76	84	74	82	89	
10	30	33	37	39	43	47	47	52	58	55	60	67	62	68	75	68	75	82	73	80	87	
20	29	32	36	38	42	47	47	51	57	54	60	66	61	67	74	67	73	81	72	79	85	
30	29	32	36	38	42	46	46	51	56	53	59	65	60	66	73	66	72	80	71	78	84	
40	29	32	35	37	41	46	45	50	55	53	58	64	59	65	71	65	71	78	70	76	82	
50	28	31	35	37	40	45	45	49	54	52	57	62	58	63	70	63	69	76	68	74	80	
7	0	28	31	34	36	40	44	48	53	51	55	61	57	62	68	62	68	75	67	73	78	
10	27	30	34	35	39	43	43	47	52	50	54	60	56	61	67	61	66	73	65	71	76	
20	27	30	33	35	38	42	42	46	51	48	53	58	54	59	65	59	65	71	64	68	74	
30	26	29	32	34	37	41	41	45	49	47	52	57	53	58	63	58	63	69	62	67	71	
40	26	28	31	33	36	40	40	44	48	46	50	55	51	56	62	56	61	67				
50	25	27	31	32	35	39	39	42	47	45	49	53	50	54	60	54	59	65				
8	0	24	27	30	31	34	38	41	45	43	47	52	48	52	58	53	57	63				
10	24	26	29	30	33	37	36	40	44	42	46	50	47	51	56	52	55	60				
20	23	25	28	29	32	35	35	38	42	40	44	48	45	49	54							
30	22	24	27	28	31	34	34	37	41	39	42	46	43	47	52							
40	21	23	26	27	30	33	33	35	39	37	41	44	41	45	49							
50	20	22	25	26	28	31	31	34	37	36	39	42	40	43	47							
9	0	19	21	24	25	27	30	32	35	34	37	40										
10	18	20	22	24	26	28	28	31	34	32	35	38										
20	18	19	21	22	24	27	27	29	32	31	33	36										
30	16	18	20	21	23	25	25	27	30	29	31	34										
40	15	17	19	20	22	24	24	26	28	27	29	32										

(ended at bottom of next page.)

DOWNE'S TABLE GIVING VALUES OF τ .

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h	m	Lat. 30°			Lat. 24°			Lat. 18°			Lat. 12°			Lat. 6°			Lat. 0°		
		x'			x'			x'			x'			x'			x'		
		.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	6	7	8	7	7	9	7	8	9	7	8	10	7	8	10	8	9	11	10
20	12	14	16	13	14	18	14	16	19	14	16	20	14	17	21	15	18	21	21
30	17	20	24	19	22	27	20	24	29	21	25	30	21	25	31	22	26	32	32
40	23	27	32	25	29	36	26	32	39	28	33	40	28	34	41	29	34	42	42
50	28	33	40	31	36	44	32	39	48	35	40	50	35	42	51	35	42	52	52
1	0	33	39	47	36	42	52	38	46	56	40	47	59	41	49	60	41	49	61
10	38	45	54	41	48	59	44	52	63	46	54	67	47	56	68	47	56	69	76
20	43	50	60	46	54	65	49	58	70	52	60	74	53	62	75	53	63	76	86
30	48	55	66	51	60	71	54	64	76	57	66	79	58	68	81	59	69	82	94
40	52	60	71	56	65	77	59	69	82	62	72	84	63	73	87	64	74	88	102
50	56	64	76	60	69	82	64	74	87	66	77	89	68	78	92	68	79	93	116
2	0	59	68	80	64	73	86	68	78	91	70	81	95	72	83	97	72	83	98
10	62	72	84	67	77	90	71	81	95	74	85	99	75	87	101	76	87	102	122
20	65	75	87	70	81	94	74	85	99	77	88	103	78	90	105	79	91	106	136
30	68	78	90	73	84	97	77	88	102	80	91	106	81	93	108	82	94	109	150
40	71	81	93	76	87	100	80	91	105	83	94	109	84	96	111	85	97	112	164
50	74	83	96	78	89	102	82	93	107	85	96	111	87	98	113	87	99	114	178
3	0	76	85	98	80	91	104	84	95	109	87	98	113	89	100	115	89	101	116
10	77	87	99	82	92	106	86	97	111	89	100	114	91	102	116	91	103	117	130
20	79	89	101	84	94	107	88	99	112	91	102	115	92	104	118	93	104	118	144
30	80	90	102	85	95	108	89	100	113	92	103	116	94	105	119	94	105	119	158
40	81	91	103	86	96	109	90	101	114	93	104	117	95	106	120	95	106	120	172
50	82	92	104	87	97	110	91	101	114	94	104	118	95	106	120	96	107	120	186
4	0	83	92	104	88	98	110	92	102	114	94	105	118	96	107	120	97	107	120
10	84	93	104	88	98	110	92	102	114	95	105	118	96	107	120	97	107	120	200
20	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	120	214
30	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	119	228
40	84	93	104	89	98	109	92	102	113	95	104	116	96	106	118	97	107	119	242
50	84	93	103	88	97	108	92	101	113	94	104	115	96	106	117	96	106	118	256
5	0	84	92	102	88	97	108	91	101	112	94	103	114	95	105	116	96	105	117
10	83	92	102	88	96	107	91	100	110	93	102	113	95	104	115	95	104	115	270
20	83	91	101	87	95	106	90	99	109	92	101	112	94	103	114	94	103	114	284
30	82	90	100	86	94	104	89	98	108	92	100	111	93	102	112	93	102	113	298
40	81	89	98	85	93	103	88	97	106	91	99	109	92	100	110				312
50	80	88	97	84	92	101	87	95	105	89	97	107							326
6	0	79	87	95	83	91	100	86	94	103	88	96	105						340
10	78	85	94	82	89	98	84	92	101										354
20	77	84	92	80	88	96	82	91	99										368
30	75	82	90	79	86	94													382
40	74	81	88	77	84	92													396
50	72	79	86																410
7	0	71	77	84															424

(Concluded from preceding page.)

h	Lat. 72			Lat. 66			Lat. 60			h	Lat. 72			Lat. 66			Lat. 60		
	x'			x'			x'				x'			x'			x'		
	.62	.56	.50	.62	.56	.50	.62	.56	.50		.62	.56	.50	.62	.56	.50	.62	.56	.50
h	m	m	m	m	m	m	m	m	m	h	m	m	m	m	m	m	m	m	m
9	50	14	16	18	18	20	22	22	24	26	11	0	7	8	8	9	10	11	10
10	0	13	15	16	17	19	21	20	22	24	10	6	6	7	7	8	9	9	10
10	10	12	14	15	16	17	19	19	21	22	20	5	5	6	6	6	7	7	8
20	11	12	14	15	16	17	17	19	20		30	3	4	4	4	5	5		
30	10	11	12	13	14	16	16	17	18		40	2	3	3	3	3	4		
40	9	10	11	12	13	14	14	15	16		50	1	1	1	1	2	2		
50	8	9	10	10	11	12	12	13	14		12	0	0	0	0	0	0		

FOR WASHINGTON MEAN NOON.

Date.	k	i	θ	L	Date.	k	i	θ	L
Jan. 1	0.978	17.2	8.7	30.9	July 4	0.381	103.7	169.0	39.8
6	0.949	26.0	0.6	36.5	9	0.522	87.4	173.9	49.8
11	0.897	37.5	354.0	44.8	14	0.678	69.1	179.8	59.8
16	0.806	52.3	348.5	55.4	19	0.830	48.7	187.2	67.2
21	0.656	71.8	343.5	65.1	24	0.943	27.5	197.9	67.7
26	0.441	96.8	338.8	63.6	Aug. 29	0.994	8.9	228.6	60.6
31	0.203	126.5	332.8	39.8	3	0.991	11.0	349.3	50.8
Feb. 5	0.038	157.6	314.6	8.7	8	0.958	23.6	8.4	42.4
10	0.020	163.8	203.7	4.3	13	0.914	34.1	15.6	36.2
15	0.122	139.3	176.6	21.2	18	0.867	42.8	19.7	32.3
20	0.260	118.7	170.4	33.2	23	0.819	50.3	22.5	30.1
25	0.389	102.8	166.6	36.5	28	0.770	57.4	24.4	29.2
Mar. 1	0.494	90.7	163.4	35.4	Sept. 2	0.717	64.3	25.8	29.4
6	0.578	81.0	160.5	33.1	7	0.656	71.8	26.9	30.6
11	0.646	73.1	157.6	31.3	12	0.585	80.2	27.2	32.6
16	0.707	65.5	155.0	30.4	17	0.496	90.4	28.2	34.8
21	0.761	58.6	152.6	30.6	22	0.385	103.3	29.8	35.8
26	0.812	51.5	150.6	31.7	27	0.248	120.3	32.0	31.8
31	0.862	43.6	148.9	34.4	Oct. 2	0.102	142.7	36.6	18.0
Apr. 5	0.913	34.4	147.4	38.8	7	0.007	170.3	63.6	1.6
10	0.960	23.0	146.0	45.6	12	0.021	163.2	199.7	4.8
15	0.994	8.7	139.6	54.7	17	0.240	121.3	206.7	44.1
20	0.994	9.1	342.4	64.0	22	0.484	91.7	208.6	63.5
25	0.935	29.6	334.7	69.1	27	0.688	67.9	209.1	61.7
30	0.817	50.6	337.7	66.4	Nov. 1	0.826	49.3	208.6	51.6
May 5	0.668	70.3	342.3	58.0	6	0.908	35.3	207.2	41.7
10	0.521	87.6	345.6	48.2	11	0.955	24.5	204.8	34.4
15	0.389	102.8	348.7	39.3	16	0.981	16.9	200.9	29.5
20	0.273	117.0	350.5	30.9	21	0.989	11.8	193.8	26.3
25	0.172	131.0	354.6	22.2	26	0.999	3.5	164.0	24.8
30	0.088	145.5	358.6	12.9	Dec. 1	0.999	4.1	40.8	24.3
June 4	0.029	160.5	7.9	4.6	6	0.992	9.9	23.4	24.9
9	0.004	172.8	62.2	0.7	11	0.980	16.3	15.5	26.7
14	0.019	164.0	141.8	3.1	16	0.958	23.5	9.6	29.9
19	0.074	148.4	155.1	11.1	21	0.923	32.2	3.9	35.0
24	0.150	134.4	160.7	19.9	26	0.865	43.1	358.4	42.5
29	0.258	118.9	164.8	29.6	31	0.773	56.8	353.6	52.5

NOTATION.

k , the ratio of the illuminated portion of the apparent disk to the entire apparent disk considered as the superficies of a circle.

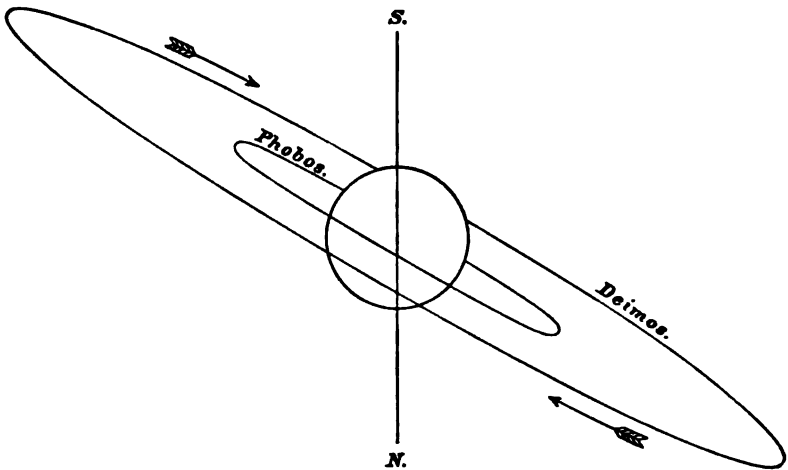
i , the angle between the sun and earth, as seen from the planet.

θ , the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L , the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

Date.	<i>k</i>	<i>i</i>	θ	<i>L</i>	Date.	<i>k</i>	<i>i</i>	θ	<i>L</i>
Jan. 1	0.652	72.2	195.9	107.8	July 4	1.000	2.0	208.3	46.9
6	0.671	70.0	193.8	102.8	9	1.000	1.4	291.8	46.9
11	0.689	67.7	191.5	98.1	14	1.000	2.3	338.0	47.0
16	0.707	65.5	189.0	93.7	19	0.999	4.3	352.4	47.1
21	0.723	63.4	186.4	89.6	24	0.997	6.2	359.1	47.3
26	0.739	61.4	183.7	85.8	Aug. 29	0.995	8.1	3.7	47.5
31	0.754	59.4	180.8	82.3	3	0.992	10.0	7.4	47.7
Feb. 5	0.769	57.4	178.0	79.1	8	0.989	12.0	10.2	48.0
10	0.783	55.5	175.1	76.2	13	0.985	13.9	12.7	48.3
15	0.797	53.6	172.3	73.5	18	0.981	15.8	14.7	48.7
20	0.810	51.7	169.6	71.0	23	0.976	17.7	16.3	49.1
25	0.822	49.9	167.0	68.7	28	0.971	19.5	17.6	49.6
Mar. 1	0.834	48.1	164.6	66.5	Sept. 2	0.965	21.4	18.8	50.1
6	0.846	46.2	162.3	64.5	7	0.959	23.3	19.5	50.7
11	0.857	44.4	160.2	62.7	12	0.953	25.1	20.0	51.3
16	0.868	42.6	158.4	61.0	17	0.946	27.0	20.2	52.0
21	0.878	40.8	156.9	59.5	22	0.938	28.8	20.2	52.7
26	0.888	39.0	155.6	58.1	27	0.930	30.6	19.9	53.5
31	0.898	37.2	154.5	56.7	Oct. 2	0.922	32.4	19.3	54.4
Apr. 5	0.907	35.5	153.6	55.5	7	0.914	34.2	18.5	55.4
10	0.916	33.7	153.0	54.4	12	0.905	36.0	17.4	56.5
15	0.924	31.9	152.7	53.4	17	0.896	37.7	16.0	57.6
20	0.932	30.1	152.9	52.5	22	0.886	39.4	14.3	58.8
25	0.940	28.3	153.2	51.7	27	0.876	41.2	12.5	60.2
30	0.947	26.5	153.7	50.9	Nov. 1	0.866	43.0	10.5	61.7
May 5	0.954	24.7	154.5	50.2	6	0.855	44.7	8.2	63.3
10	0.961	22.8	155.7	49.6	11	0.844	46.5	5.8	65.0
15	0.967	21.0	157.2	49.1	16	0.833	48.3	3.3	66.8
20	0.972	19.1	158.9	48.6	21	0.821	50.1	0.7	68.8
25	0.977	17.2	161.0	48.2	26	0.809	51.9	358.1	71.0
30	0.982	15.4	163.4	47.8	Dec. 1	0.796	53.7	355.6	73.4
June 4	0.986	13.5	166.1	47.5	6	0.783	55.5	353.1	76.0
9	0.990	11.6	169.3	47.3	11	0.769	57.4	350.7	78.8
14	0.993	9.6	172.8	47.1	16	0.755	59.3	348.5	81.8
19	0.995	7.7	176.8	47.0	21	0.740	61.3	346.4	85.1
24	0.997	5.8	182.6	47.0	26	0.725	63.3	344.5	88.7
29	0.999	3.8	190.5	46.9	31	0.708	65.4	342.8	92.6



APPARENT ORBITS OF THE SATELLITES OF MARS DURING THE OPPOSITION OF 1896.
AS SEEN IN AN INVERTING TELESCOPE.

The circle represents the disk of the planet and is on the same scale as the orbits.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

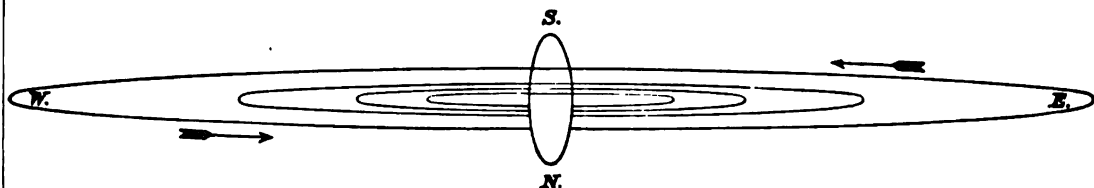
Phobos.						Deimos.					
Nov.			Nov.			Nov.			Dec.		
d	h		d	h		d	h		d	h	
11	20.2	W.	28	13.9	E.	15	7.6	W.	5	23.4	W.
12	22.9	E.	29	16.7	W.	16	10.4	E.	7	20.8	E.
14	1.7	W.	30	19.5	E.	17	13.2	W.	9	18.2	W.
15	4.5	E.	Dec. 1	22.2	W.	18	15.9	E.	11	15.6	E.
16	7.3	W.	3	1.0	E.	19	18.7	W.	13	13.0	W.
17	10.1	E.	4	3.8	W.	20	21.5	E.	15	10.4	E.
18	12.9	W.	5	6.6	E.	22	0.3	W.	17	7.8	W.
19	15.6	E.	6	9.4	W.	23	3.1	E.	19	5.2	E.
20	18.4	W.	7	12.1	E.	24	5.9	W.	21	2.6	W.
21	21.2	E.	8	14.9	W.	25	8.7	E.	23	0.0	E.
23	0.0	W.	9	17.7	E.	26	11.5	W.	24	21.4	W.
24	2.8	E.	10	20.5	W.	27	14.2	E.	26	18.8	E.
25	5.6	W.	11	23.3	E.	28	17.0	W.	28	16.2	W.
26	8.3	E.	13	2.1	W.	29	19.8	E.	30	13.6	E.
27	11.1	W.	14	4.8	E.	30	22.6	W.	Dec. 2	11.0	W.

Date.	Position Angle.	Distance.	Date.	Position Angle.	Distance.
Nov. 20	62.5	22.3	Nov. 20	62.9	55.8
Dec. 10	59.3	23.0	Dec. 10	59.9	57.3
31	56.6	20.4	31	57.3	51.0

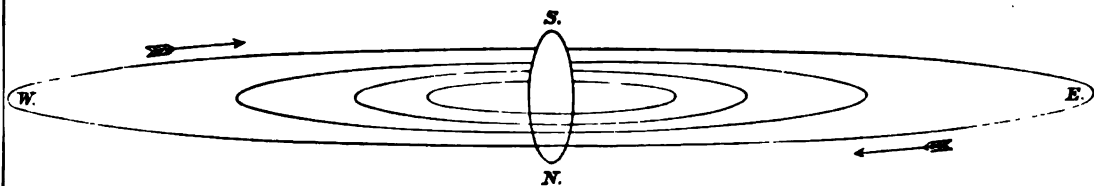
For Phobos every seventh eastern and western elongation is given and for Deimos every third; the intermediate ones may be found by adding the periodic time of each satellite. Periodic time of Phobos, 7^h 39^m 13^s.94. Periodic time of Deimos, 30^h 17^m 54^s.38.

APPARENT DISK OF MARS.

Jan. 1,	0.985	May 30,	0.878	Sept. 27,	0.870
31,	0.962	June 29,	0.862	Oct 27,	0.920
March 1,	0.943	July 29,	0.852	Nov. 26,	0.986
31,	0.921	Aug. 28,	0.852	Dec 26,	0.987
April 30,	0.898				



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN JANUARY, 1896,
AS SEEN IN AN INVERTING TELESCOPE.



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN DECEMBER, 1896,
AS SEEN IN AN INVERTING TELESCOPE.

(The vertical scale for the planet is three times and for the orbits five times the horizontal one.)

The object of this figure is to facilitate the identification of the satellites in cases where the diagrams of configurations do not suffice for that purpose: reference to the above diagram enables one to identify the inner and outer satellite of the pair. The central, vertical ellipse represents the disk of Jupiter, elongated three times in the vertical direction.

Facing each page of the phenomena of Jupiter's satellites, pages 462—482, is the page of diagrams of configurations, for the same month. The light disks \bigcirc in the vertical row in the middle of the page represent the relative position of Jupiter each day. The dots adjacent in the same horizontal space represent the positions of the several satellites on the same day, at the hour and minute of Washington mean time indicated above the diagrams. The latitudes of the satellites are always considered zero in constructing the diagrams, except where two or more satellites chance to be at nearly the same distance from the planet, when they are placed one above the other according to their apparent latitudes. The numerals designating the satellites are placed on the right or left hand side of the dot, according as the motion of the satellite, for the time of the configuration, is toward the east or toward the west—the motion being always toward the numeral. Frequently, at the epoch of the configuration, one or more satellites will be invisible, being projected on the disk of the planet: this phenomenon is indicated by a light disk \bigcirc at the left hand side of the page. Frequently, also, one or more satellites will be invisible, being concealed in occultation behind the disk, or eclipsed in the shadow of the planet: this phenomenon is indicated by a dark disk \bullet at the right hand side of the page. In both cases, the annexed numeral serves to point out which satellite is thus rendered invisible.

When an observation is made at a different hour from that for which the diagram is constructed, the motion of the satellite during the interval may be judged by transferring its given position to the above diagram, and estimating its motion during the elapsed interval on the above diagrams of the orbits, by means of the following table of the periods;—

MEAN SYNODIC PERIODS OF THE SATELLITES.

	d	h	m	s	=	d		d	h	m	s	=	d
I.	1	18	28	35.945	=	1.76986048	III.	7	3	59	35.854	=	7.16638720
II.	3	13	17	53.735	=	3.55409416	IV.	16	18	5	6.928	=	16.75355241

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.											
SATELLITE I.											
Jan.	1	h m	March	18	h m	June	4	h m	Oct.	15	h m
	2	4 39.1		20	23 59.6		6	21 15.4		17	16 56.3
	4	23 5.1		22	18 27.1		8	15 45.3		19	11 26.0
	6	17 31.1		24	12 55.0		10	10 15.4		21	5 55.4
	8	11 57.0		26	7 22.8		11	4 45.5		22	0 24.8
		6 23.0			1 50.6			23 15.7			18 54.0
	10	0 48.9		27	20 18.5		13	17 45.7		24	13 23.4
	11	19 14.9		29	14 46.6		15	12 15.8		26	7 52.6
	13	13 40.7		31	9 14.6		17	6 45.9		28	2 21.9
	15	8 6.6	April	2	3 42.9		19	1 16.2		29	20 51.0
	17	2 32.4		3	22 11.1		20	19 46.3		31	15 20.2
	18	20 58.2		5	16 39.4		22	14 16.6	Nov.	2	9 49.3
	20	15 24.0		7	11 7.7		24	8 46.8		4	4 18.4
	22	9 50.0		9	5 36.2		26	3 17.1		5	22 47.4
	24	4 15.8		11	0 4.6		27	21 47.3		7	17 16.5
	25	22 41.8		12	18 33.3		29	16 17.6		9	11 45.3
	27	17 7.6		14	13 2.0	July	1	10 47.8		11	6 14.2
	29	11 33.7		16	7 30.7		3	5 18.0		13	0 42.9
Feb.	31	5 59.5		18	1 59.4		4	23 48.2		14	19 11.6
	2	0 25.6		19	20 28.5		6	18 18.6		16	13 40.4
	3	18 51.6		21	14 57.3		8	12 49.0		18	8 9.0
	5	13 17.5		23	9 26.3		10	7 19.3		20	2 37.6
	7	7 43.4		25	3 55.3		12	1 49.5		21	21 6.1
	9	2 9.6		26	22 24.3		13	20 19.9		23	15 34.5
	10	20 35.9		28	16 53.3		15	14 50.1		25	10 2.9
	12	15 2.1		30	11 22.6	Sept.	10	6 59.6		27	4 31.3
	14	9 28.3	May	2	5 51.7		12	1 29.7		28	22 59.6
	16	3 54.6		4	0 21.1		13	19 59.7		30	17 27.8
	17	22 20.9		5	18 50.3		15	14 29.8	Dec.	2	11 55.9
	19	16 47.4		7	13 19.7		17	8 59.8		4	6 23.9
	21	11 13.9		9	7 49.1		19	3 29.9		6	0 51.9
	23	5 40.4		11	2 18.7		20	21 59.8		7	19 19.8
	25	0 7.0		12	20 48.2		22	16 29.8		9	13 47.8
	26	18 33.7		14	15 17.9		24	10 59.7		11	8 15.7
	28	13 0.3		16	9 47.3		26	5 29.7		13	2 43.3
March	1	7 27.3		18	4 17.0		27	23 59.6		14	21 10.9
	3	1 54.2		19	22 46.6		29	18 29.4		16	15 38.5
	4	20 21.2		21	17 16.4	Oct.	1	12 59.2		18	10 6.0
	6	14 48.2		23	11 45.9		3	7 28.9		20	4 33.6
	8	9 15.4		25	6 15.9		5	1 58.7		21	23 1.1
	10	3 42.5		27	0 45.7		6	20 28.3		23	17 28.3
	11	22 9.7		28	19 15.7		8	14 57.9		25	11 55.6
	13	16 37.1		30	13 45.4		10	9 27.6		27	6 22.8
	15	11 4.5	June	1	8 15.4		12	3 57.2		29	0 49.9
	17	5 32.0		3	2 45.3		13	22 26.7		30	19 17.1

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE II.

		h	m			h	m			h	m			h	m
Jan.	1	13	22.0	March	19	14	34.1	June	5	19	12.8	Oct.	15	10	51.5
	5	2	30.1		23	3	47.4		9	8	35.0		19	0	14.6
	8	15	37.4		26	17	1.1		12	21	57.3		22	13	36.4
	12	4	45.2		30	6	15.9		16	11	19.9		26	2	58.8
	15	17	52.3	April	2	19	30.3		20	0	42.6		29	16	20.1
	19	6	59.6		6	8	45.7		23	14	5.6	Nov.	2	5	41.9
	22	20	6.4		9	22	1.6		27	3	28.7		5	19	2.5
	26	9	13.5		13	11	18.1		30	16	51.9		9	8	23.5
	29	22	20.5		17	0	35.0	July	4	6	15.4		12	21	43.3
Feb.	2	11	27.8		20	13	52.4		7	19	38.9		16	11	3.4
	6	0	34.9		24	3	10.1		11	9	2.5		20	0	22.6
	9	13	42.8		27	16	28.3		14	22	26.4		23	13	42.1
	13	2	50.5	May	1	5	46.9	Sept.	9	20	55.3		27	3	0.2
	16	15	58.8		4	19	6.1		13	10	19.7		30	16	18.8
	20	5	7.2		8	8	25.6		16	23	43.7	Dec.	4	5	35.8
	23	18	16.5		11	21	45.5		20	13	8.0		7	18	53.3
	27	7	26.0		15	11	5.6		24	2	31.6		11	8	9.3
March	1	20	36.1		19	0	26.1		27	15	55.5		14	21	25.9
	5	9	46.5		22	13	46.9	Oct.	1	5	18.8		18	10	40.6
	8	22	57.6		26	3	8.0		4	18	42.7		21	23	55.8
	12	12	9.2		29	16	29.3		8	8	5.5		25	13	9.4
	16	1	21.4	June	2	5	50.9		11	21	29.8		28	2	23.6

SATELLITE III.

		h	m			h	m			h	m			h	m
Jan.	7	14	30.7	March	26	3	59.6	June	13	1	7.0	Oct.	27	12	44.4
	14	17	48.2	April	2	7	46.2		20	5	28.8	Nov.	3	16	56.5
	21	21	3.4		9	11	38.3		27	9	52.1		10	21	5.4
	29	0	18.4		16	15	34.8	July	4	14	16.8		18	1	10.7
Feb.	5	3	34.2		23	19	35.5		11	18	42.5		25	5	11.8
	12	6	52.4		30	23	39.6	Sept.	14	10	46.1	Dec.	2	9	9.4
	19	10	13.4	May	8	3	46.7		21	15	10.4		9	13	2.7
	26	13	38.2		15	7	57.1		28	19	32.5		16	16	52.4
March	4	17	6.9		22	12	10.8	Oct.	5	23	53.6		23	20	36.6
	11	20	40.1		29	16	27.4		13	4	12.5		31	0	18.1
	19	0	17.4	June	5	20	45.9		20	8	29.4				

SATELLITE IV.

		h	m			h	m			h	m			h	m
Jan.	3	21	28.0	March	26	23	40.1	June	18	21	25.7	Oct.	14	20	38.7
	20	11	37.4	April	12	16	53.1	July	5	17	46.0		31	16	11.3
Feb.	6	1	42.7		29	11	1.0					Nov.	17	11	6.4
	22	16	11.3	May	16	5	55.2	Sept.	11	4	14.7	Dec.	4	5	14.9
March	10	7	26.2	June	2	1	26.3		28	0	36.4		20	22	28.5

WASHINGTON MEAN TIME.

JANUARY.

d	h	m	s				d	h	m	s				d	h	m	s			
1	2	58	25.0	I.	Ec.	Dis.	11	4	49		III.	Sh.	Eg.	21	11	33		I.*	Tr.	In.
	5	49		I.	Oc.	Re.		6	7		III.	Tr.	Eg.		13	50		I.*	Sh.	Eg.
	10	51	9.3	II.*	Ec.	Dis.		17	49	9.1	I.*	Ec.	Dis.		13	53		I.*	Tr.	Eg.
	14	50		II.*	Oc.	Re.		20	25		I.	Oc.	Ke.		19	6	43.5	III.	Ec.	Dis.
2	0	16		I.	Sh.	In.		22	53		IV.	Sh.	In.		22	53		III.	Oc.	Re.
	0	48		I.	Tr.	In.	12	1	34		IV.	Tr.	In.	22	8	40	12.7	I.*	Ec.	Dis.
	2	36		I.	Sh.	Eg.		2	45	1.0	II.	Ec.	Dis.		11	0		I.*	Oc.	Re.
	3	8		I.	Tr.	Eg.		3	28		IV.	Sh.	Eg.		18	38	16.8	II.	Ec.	Dis.
	21	26	48.8	I.	Ec.	Dis.		6	13		II.	Oc.	Re.		21	34		II.	Oc.	Re.
3	0	15		I.	Oc.	Re.		6	17		IV.	Tr.	Eg.	23	5	58		I.	Sh.	In.
	5	1		II.	Sh.	In.		15	7		I.*	Sh.	In.		5	59		I.	Tr.	In.
	6	1		II.	Tr.	In.		15	23		I.*	Tr.	In.		8	18		I.*	Sh.	Eg.
	7	55		II.*	Sh.	Eg.		17	27		I.*	Sh.	Eg.		8	19		I.*	Tr.	Eg.
	8	56		II.*	Tr.	Eg.		17	44		I.*	Tr.	Eg.	24	3	6		I.	Oc.	Dis.
	14	33	28.2	IV.*	Ec.	Dis.	13	12	17	36.5	I.*	Ec.	Dis.		5	26		I.	Oc.	Re.
	18	44		I.*	Sh.	In.		14	51		I.*	Oc.	Re.		12	43		II.*	Tr.	In.
	18	58	43.6	IV.	Ec.	Re.		20	53		II.	Sh.	In.		12	45		II.*	Sh.	In.
	19	7		IV.	Oc.	Dis.		21	22		II.	Tr.	In.		15	38		II.*	Tr.	Eg.
	19	13		I.	Tr.	In.		23	47		II.	Sh.	Eg.		15	40		II.*	Sh.	Eg.
	21	4		I.	Sh.	Eg.	14	0	17		II.	Tr.	Eg.	25	0	25		I.	Tr.	In.
	21	14		III.	Sh.	In.		9	35		I.*	Sh.	In.		0	27		I.	Sh.	In.
	21	33		I.	Tr.	Eg.		9	49		I.*	Tr.	In.		2	45		I.	Tr.	Eg.
	23	10		III.	Tr.	In.		11	55		I.*	Sh.	Eg.		2	46		I.	Sh.	Eg.
	23	50		IV.	Oc.	Re.		12	10		I.*	Tr.	Eg.		8	58		III.*	Tr.	In.
4	0	51		III.	Sh.	Eg.		15	8	7.7	III.*	Ec.	Dis.		9	10		III.*	Sh.	In.
	2	50		III.	Tr.	Eg.		19	38		III.	Oc.	Re.		12	38		III.*	Tr.	Eg.
	15	55	18.1	I.*	Ec.	Dis.	15	6	46	7.3	I.*	Ec.	Dis.		12	48		III.*	Sh.	Eg.
	18	41		I.*	Oc.	Re.		9	17		I.*	Oc.	Re.		21	32		I.	Oc.	Dis.
5	0	9	20.4	II.	Ec.	Dis.		16	2	34.6	II.*	Ec.	Dis.		23	52	43.8	I.	Ec.	Re.
	3	58		II.	Oc.	Re.		19	20		II.	Oc.	Re.	26	7	46		II.*	Oc.	Dis.
	13	13		I.*	Sh.	In.	16	4	4		I.	Sh.	In.		10	46	30.7	II.*	Ec.	Re.
	13	39		I.*	Tr.	In.		4	15		I.	Tr.	In.		18	51		I.	Tr.	In.
	15	32		I.*	Sh.	Eg.		6	23		I.*	Sh.	Eg.		18	56		I.	Sh.	In.
	15	59		I.*	Tr.	Eg.		6	36		I.*	Tr.	Eg.		21	11		I.	Tr.	Eg.
6	10	23	43.2	I.*	Ec.	Dis.	17	1	14	35.2	I.	Ec.	Dis.		21	16		I.	Sh.	Eg.
	13	7		I.*	Oc.	Re.		3	42		I.	Oc.	Re.	27	15	58		I.*	Oc.	Dis.
	18	18		II.*	Sh.	In.		10	10		II.*	Sh.	In.		18	21	17.4	I.	Ec.	Re.
	19	8		II.	Tr.	In.		10	29		II.*	Tr.	In.	28	1	50		II.	Tr.	In.
	21	12		II.	Sh.	Eg.		13	5		II.*	Sh.	Eg.		2	3		II.	Sh.	In.
	22	3		II.	Tr.	Eg.		13	24		II.*	Tr.	Eg.		4	45		II.	Tr.	Eg.
7	7	41		I.*	Sh.	In.		22	32		I.	Sh.	In.		4	58		II.	Sh.	Eg.
	8	5		I.*	Tr.	In.		22	41		I.	Tr.	In.		13	17		I.*	Tr.	In.
	10	1		I.*	Sh.	Eg.	18	0	52		I.	Sh.	Eg.		13	24		I.*	Sh.	In.
	10	25		I.*	Tr.	Eg.		1	2		I.	Tr.	Eg.		15	37		I.*	Tr.	Eg.
	11	9	3.0	III.*	Ec.	Dis.		5	10		III.	Sh.	In.		15	39		IV.*	Tr.	In.
	16	21		III.*	Oc.	Re.		5	43		III.	Tr.	In.		15	44		I.*	Sh.	Eg.
8	4	52	11.3	I.	Ec.	Dis.		8	48		III.*	Sh.	Eg.		16	52		IV.*	Sh.	In.
	7	33		I.*	Oc.	Re.		9	23		III.*	Tr.	Eg.		20	22		IV.	Tr.	Eg.
	13	26	53.0	II.*	Ec.	Dis.		19	43	9.4	I.	Ec.	Dis.		21	29		IV.	Sh.	Eg.
	17	5		II.*	Oc.	Re.		22	8		I.	Oc.	Re.		22	29		III.	Oc.	Dis.
9	2	10		I.	Sh.	In.	19	5	20	39.6	II.	Ec.	Dis.	29	2	34	55.0	III.	Ec.	Re.
	2	32		I.	Tr.	In.		8	27		II.*	Oc.	Re.		10	24		I.*	Oc.	Dis.
	4	29		I.	Sh.	Eg.		17	1		I.*	Sh.	In.		12	49	54.5	I.*	Ec.	Re.
	4	52		I.	Tr.	Eg.		17	7		I.*	Tr.	In.		20	53		II.	Oc.	Dis.
	23	20	37.4	I.	Ec.	Dis.		19	21		I.	Sh.	Eg.	30	0	4	6.7	II.	Ec.	Re.
10	1	59		I.	Oc.	Re.		19	27		I.	Tr.	Eg.		7	43		I.*	Tr.	In.
	7	36		II.*	Sh.	In.	20	8	34	15.2	IV.*	Ec.	Dis.		7	53		I.*	Sh.	In.
	8	15		II.*	Tr.	In.		13	59		IV.*	Oc.	Re.		10	3		I.*	Tr.	Eg.
	10	30		II.*	Sh.	Eg.		14	11	39.2	I.*	Ec.	Dis.		10	12		I.*	Sh.	Eg.
	11	10		II.*	Tr.	Eg.		16	34		I.*	Oc.	Re.	31	4	49		I.	Oc.	Dis.
	20	38		I.	Sh.	In.		23	27		II.	Sh.	In.		7	18	28.4	I.*	Ec.	Re.
	20	57		I.	Tr.	In.		23	36		II.	Tr.	In.		14	57		II.*	Tr.	In.
	22	58		I.	Sh.	Eg.	21	2	21		II.	Sh.	Eg.		15	21		II.*	Sh.	In.
	23	17		I.	Tr.	Eg.		2	31		II.	Tr.	Eg.		17	52		II.	Tr.	Eg.
11	1	12		III.	Sh.	In.		11	30		I.*	Sh.	In.		18	16		II.	Sh.	Eg.
	2	27		III.	Tr.	In.														

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation.

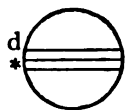
* the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

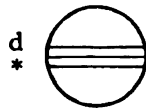
JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

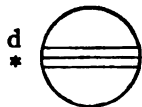
I.



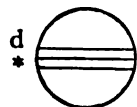
III.



II.



IV.

*Configurations at 12^h 30^m for an Inverting Telescope.*

Day.	West.			East.		
1	'4		○	'1	'3	'2 ●
2		'4	'1	○	2'	3'
3			'4	○	1' 3'	
4		'23'	'1	○	'4	
5	3'		○	I.	'2	'4
6		'3	○	2'		'4
7		2'	1' 3'	○		'4
8			'2	○	'1	'3
9		1'	○		'2	3'
10		2'	○	1'	3'	4'
11		'2	'3	○	4'	
12	3'		4'	○	I' 2'	
13	'4		'1	○	2'	
14	'4'	2'	'31'	○		
15	4'		'2	○	'1	'3
16	'4		1'	○	'2	'3
17	○ 2'	'4		○	'1	3'
18		'4	'2	'1	3'	○
19		3'	'4	○	1'	
20		'3	'1	○	2'	
21	○ 1'		2'	'3	○	'4
22			'2	○	'1	'3
23			1'	○	'2	'3
24				○ 2'	'1	3'
25	○ 3'		'2	'1	○	4'
26		3'		○	'2	1'
27		'3		'1	○	2'
28			'3	'2	○	1' 4'
29		4'	'2	○	'3	
30		4'	1'	○	'2	'3
31	4'			○	2'	'1

WASHINGTON MEAN TIME.

FEBRUARY.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	2	9		I.	10	22	10	21.0	I.	20	12	56		I.*	21	10	4		I.*
2	21			I.	11	6	20		II.*	13	36			I.*	13	36			I.*
4	29			I.	7	15			II.*	15	16			I.*	15	16			I.*
4	41			I.	9	15			II.*	15	56			I.*	15	56			I.*
12	15			III.*	10	10			II.*	21	10	4		I.*	21	10	4		I.*
13	9			III.*	16	45			I.*	13	2	31.2		I.*	13	2	31.2		I.*
15	54			III.*	17	13			I.	21	46			II.	21	46			II.
16	47			III.*	19	5			I.	23	9			II.	23	9			II.
23	16			I.	19	33			I.	22	0	41		II.	22	0	41		II.
2	1	47	8.7	I.	12	5	3		III.	2	4			II.	2	4			II.
10	0			II.*	10	33	22.2		III.*	7	23			I.*	7	23			I.*
13	22	4.7		II.*	13	52			I.*	8	5			I.*	8	5			I.*
20	35			I.	16	39	3.3		I.*	9	43			I.*	9	43			I.*
20	50			I.	13	1	23		II.	10	25			I.*	10	25			I.*
22	55			I.	5	15	13.0		II.	13	51			IV.*	13	51			IV.*
23	10			I.	11	12			I.*	18	31			IV.	18	31			IV.
17	42			I.*	11	42			I.*	20	38	33.5		IV.	20	38	33.5		IV.
20	15	44.5		I.	13	32			I.*	22	14			III.	22	14			III.
4	4			II.	14	2			I.*	23	1	6		III.	23	1	6		III.
4	39			II.	14	5	54		IV.	1	13	40.9		IV.	1	13	40.9		IV.
6	59			II.	8	18			I.*	1	53			III.	1	53			III.
7	34			II.*	10	35			IV.*	4	30			I.	4	30			I.
15	1			I.*	10	52			IV.*	4	45			III.	4	45			III.
15	18			I.*	11	7	41.3		I.*	7	31	18.3		I.*	7	31	18.3		I.*
17	21			I.*	15	32			IV.*	16	49			II.	16	49			II.
17	38			I.*	19	28			II.	21	8	29.8		II.	21	8	29.8		II.
5	1	45		III.	20	33			II.	24	1	50		I.	24	1	50		I.
6	34	1.0		III.*	22	23			II.	2	34			I.	2	34			I.
12	8			I.*	23	28			II.	4	10			I.	4	10			I.
14	44	24.2		I.*	15	5	38		I.	4	54			I.	4	54			I.
23	7			II.	6	10			I.*	22	57			I.	22	57			I.
23	22			IV.	7	58			I.*	2	0	0.4		I.	2	0	0.4		I.
6	2	39	41.2	II.	8	30			I.*	10	56			II.*	10	56			II.*
7	8	33.6		IV.*	18	52			III.	12	27			II.*	12	27			II.*
9	27			I.*	21	7			III.	13	51			II.*	13	51			II.*
9	47			I.*	22	31			III.	15	22			II.*	15	22			II.*
11	47			I.*	16	0	46		III.	20	16			I.	20	16			I.
12	7			I.*	2	45			I.	21	2			I.	21	2			I.
7	6	33		I.*	5	36	26.4		I.	22	36			I.	22	36			I.
9	13	0.3		I.*	14	31			II.*	23	22			I.	23	22			I.
17	12			II.	18	33	4.5		II.	11	49			III.*	11	49			III.*
17	57			II.	17	0	4		I.	17	24			I.	17	24			I.
20	7			II.	0	39			I.	18	33	17.2		III.	18	33	17.2		III.
20	52			II.	2	24			I.	20	28	47.3		I.	20	28	47.3		I.
8	3	53		I.	2	59			I.	5	59			II.	5	59			II.
4	15			I.	21	11			I.	10	26	6.7		II.*	10	26	6.7		II.*
6	13			I.*	18	0	5	6.6	I.	14	42			I.*	14	42			I.*
6	35			I.*	8	37			II.*	15	31			I.*	15	31			I.*
15	32			III.*	9	51			II.*	17	2			I.	17	2			I.
17	8			III.*	11	32			II.*	17	51			I.	17	51			I.
19	11			III.	12	46			II.*	28	11	50		I.*	28	11	50		I.*
20	47			III.	18	30			I.	14	57	29.0		I.*	14	57	29.0		I.*
9	1	0		I.	19	7			I.	29	0	7		II.	29	0	7		II.
3	41	43.1		I.	20	50			I.	1	45			II.	1	45			II.
12	15			II.*	21	27			I.	3	2			II.	3	2			II.
15	57	36.1		II.*	19	8	24		III.*	4	40			II.	4	40			II.
22	19			I.	14	33	25.8		III.*	9	9			I.*	9	9			I.*
22	44			I.	15	37			I.*	9	59			I.*	9	59			I.*
10	0	39		I.	18	33	51.1		I.	11	29			I.*	11	29			I.*
1	4			I.	20	3	40		II.	12	19			I.*	12	19			I.*
19	26			I.	7	50	41.5		II.*					II.*					II.*

NOTES.—In, denotes ingress; Eg, egress; Dis, disappearance; Re, reappearance; Ec, eclipse.

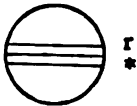
Oc, denotes occultation; Tr, transit of the satellite; Sh, transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

FEBRUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



III.



II.



IV.



Configurations at 11^h 30^m for an Inverting Telescope.

Day.	West.				East.			
1	4'		2'	1'	○ 3'			
2	'4		3'		○	1'		'2 ●
3	'4	'3		'1	○	2'		
4		'4	'3	2'	○	1'		
5			'2	'4	'1 ○	'3		
6	○ 1'				○	'4	'2	'3
7					○	'12'	3''4	
8			2'	1'	○	3'		'4
9			3'		'2 ○	'1		'4
10		3'		'1	○	2'		4'
11			'3	2'	○	1'		4'
12			'2	'1	○	'3		4'
13	○ 1'				○	'2	4'	'3
14				4'	○	'1	2'	3'
15		4'	2'	1'	○	3'		
16		4'		3'	'2 ○	'1		
17	4'	3'		1'	○	'2		
18	○ 2'4'		'3		○	1'		
19	'4		'2	'1	○			'3 ●
20		'4			○	1'	'2	'3
21			'4		○	2'	3'	'1 ●
22			2'	1''4	○	3'		
23			3'	'2	○	'1	'4	
24		3'		1'	○	'2	'4	
25	○ 2'		'3		○	1'		'4
26			'2	'1	'3 ○			'4
27					○	1'	'3	4'
28				'1	○	2'	3'	4'
29			2'	1' ○		3'	4'	

WASHINGTON MEAN TIME.

MARCH.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s			
1	1	40		III.	Tr.	In.		10	20	35		II.	Sh.	Eg.	21	10	17		II.*	Tr.	Eg.
	5	5		III.	Sh.	In.			23	51		I.	Tr.	In.		12	32		II.*	Sh.	Eg.
	5	19		III.	Tr.	Eg.		11	0	52		I.	Sh.	In.		14	35		I.*	Tr.	In.
	6	17		I.*	Oc.	Dis.			2	11		I.	Tr.	Eg.		15	44		I.	Sh.	In.
	8	45		III.*	Sh.	Eg.			3	12		I.	Sh.	Eg.		16	55		I.	Tr.	Eg.
	9	26	17.9	I.*	Ec.	Re.			18	51		III.	Oc.	Dis.		18	4		I.	Sh.	Eg.
	19	9		II.	Oc.	Dis.			21	0		I.	Oc.	Dis.		22	11	45	I.*	Oc.	Dis.
	20	45		IV.	Tr.	In.			22	29		III.	Oc.	Re.		12	26		III.*	Tr.	In.
	23	43	51.6	II.	Ec.	Re.			23	1	45.7	III.	Ec.	Dis.		15	11	54.1	I.	Ec.	Re.
2	1	25		IV.	Tr.	Eg.		12	0	18	59.7	I.	Ec.	Re.		16	4		III.	Tr.	Eg.
	3	36		I.	Tr.	In.			3	33	28.3	III.	Ec.	Re.		17	3		III.	Sh.	In.
	4	28		I.	Sh.	In.			10	42		II.*	Oc.	Dis.		20	44		III.	Sh.	Eg.
	4	52		IV.	Sh.	In.			15	36	46.0	II.	Ec.	Re.		23	2	20	II.	Oc.	Dis.
	5	56		I.	Tr.	Eg.			18	18		I.	Tr.	In.		7	29	35.6	II.*	Ec.	Re.
	6	48		I.*	Sh.	Eg.			19	20		I.	Sh.	In.		9	3		I.*	Tr.	In.
	9	36		IV.*	Sh.	Eg.			20	38		I.	Tr.	Eg.		10	12		I.*	Sh.	In.
3	0	44		I.	Oc.	Dis.			21	40		I.	Sh.	Eg.		11	23		I.*	Tr.	Eg.
	3	55	1.4	I.	Ec.	Re.		13	15	27		I.	Oc.	Dis.		12	32		I.*	Sh.	Eg.
	13	18		II.*	Tr.	In.			18	47	44.2	I.	Ec.	Re.		24	6	13	I.	Oc.	Dis.
	15	3		II.*	Sh.	In.		14	4	54		II.	Tr.	In.		9	40	41.9	I.*	Ec.	Re.
	16	13		II.*	Tr.	Eg.			6	59		II.*	Sh.	In.		20	36		II.	Tr.	In.
	17	58		II.	Sh.	Eg.			7	49		II.*	Tr.	Eg.		22	54		II.	Sh.	In.
	22	3		I.	Tr.	In.			9	54		II.*	Sh.	Eg.		23	31		II.	Tr.	Eg.
	22	57		I.	Sh.	In.			12	45		I.*	Tr.	In.		25	1	50	II.	Sh.	Eg.
4	0	23		I.	Tr.	Eg.			13	49		I.*	Sh.	In.		3	31		I.	Tr.	In.
	1	17		I.	Sh.	Eg.			15	5		I.	Tr.	Eg.		4	41		I.	Sh.	In.
	15	17		III.*	Oc.	Dis.			16	9		I.	Sh.	Eg.		5	51		I.	Tr.	Eg.
	18	56		III.	Oc.	Re.		15	8	46		III.*	Tr.	In.		7	1		I.*	Sh.	Eg.
	19	2	15.0	III.	Ec.	Dis.			9	55		I.*	Oc.	Dis.		26	0	41	I.	Oc.	Dis.
	19	11		I.	Oc.	Dis.			12	24		III.*	Tr.	Eg.		2	11		III.	Oc.	Dis.
	22	23	50.1	I.	Ec.	Re.			13	4		III.*	Sh.	In.		4	9	34.6	I.	Ec.	Re.
	22	33	39.0	III.	Ec.	Re.			13	16	36.3	I.*	Ec.	Re.		5	49		III.	Oc.	Re.
5	8	19		II.*	Oc.	Dis.			16	44		III.	Sh.	Eg.		7	0	43.2	III.*	Ec.	Dis.
	13	1	28.3	II.*	Ec.	Re.			23	54		II.	Oc.	Dis.		10	33	0.0	III.*	Ec.	Re.
	16	30		I.	Tr.	In.		16	4	54	25.0	II.	Ec.	Re.		15	34		II.*	Oc.	Dis.
	17	26		I.	Sh.	In.			7	13		I.*	Tr.	In.		20	47	9.1	II.	Ec.	Re.
	18	50		I.	Tr.	Eg.			8	18		I.*	Sh.	In.		21	21		IV.	Oc.	Dis.
	19	46		I.	Sh.	Eg.			9	33		I.*	Tr.	Eg.		21	59		I.	Tr.	In.
6	13	38		I.*	Oc.	Dis.			10	38		I.*	Sh.	Eg.		23	10		I.	Sh.	In.
	16	52	33.4	I.	Ec.	Re.		17	4	22		I.	Oc.	Dis.		27	0	19	I.	Tr.	Eg.
7	2	30		II.	Tr.	In.			7	45	23.1	I.*	Ec.	Re.		1	30		I.	Sh.	Eg.
	4	22		II.	Sh.	In.			18	8		II.	Tr.	In.		2	0		IV.	Oc.	Re.
	5	23		II.	Tr.	Eg.			20	17		II.	Sh.	In.		8	44	51.3	IV.*	Ec.	Dis.
	7	17		II.*	Sh.	Eg.			21	3		II.	Tr.	Eg.		13	24	51.9	IV.*	Ec.	Re.
	10	57		I.*	Tr.	In.			23	12		II.	Sh.	Eg.		19	19		I.	Oc.	Dis.
	11	54		I.*	Sh.	In.		18	1	40		I.	Tr.	In.		22	38	21.3	I.	Ec.	Re.
	13	17		I.*	Tr.	Eg.			2	46		I.	Sh.	In.		28	9	51	II.*	Tr.	In.
	14	14		I.*	Sh.	Eg.			4	0		I.	Tr.	Eg.		12	13		II.*	Sh.	In.
8	5	11		III.	Tr.	In.			5	6		I.	Sh.	Eg.		12	46		II.*	Tr.	Eg.
	8	5		I.*	Oc.	Dis.			12	27		IV.*	Tr.	In.		15	9		II.	Sh.	Eg.
	8	49		III.*	Tr.	Eg.			17	6		IV.	Tr.	Eg.		16	27		I.	Tr.	In.
	9	4		III.*	Sh.	In.			22	28		III.	Oc.	Dis.		17	38		I.	Sh.	In.
	11	21	24.1	I.*	Ec.	Re.			22	50		I.	Oc.	Dis.		18	47		I.	Tr.	Eg.
	12	44		III.*	Sh.	Eg.			22	53		IV.	Sh.	In.		19	58		I.	Sh.	Eg.
	21	30		II.	Oc.	Dis.		19	2	7		III.	Oc.	Re.		29	14	37	I.	Oc.	Dis.
9	2	19	10.1	II.	Ec.	Re.			2	14	16.8	I.	Ec.	Re.		16	11		III.	Tr.	In.
	5	24		I.	Tr.	In.			3	1	13.2	III.	Ec.	Dis.		17	7	15.7	I.	Ec.	Re.
	6	23		I.*	Sh.	In.			3	39		IV.	Sh.	Eg.		19	49		III.	Tr.	Eg.
	7	44		I.*	Tr.	Eg.			6	33	13.6	III.*	Ec.	Re.		21	3		III.	Sh.	In.
	8	43		I.*	Sh.	Eg.			13	7		II.*	Oc.	Dis.		30	0	44	III.	Sh.	Eg.
10	2	33		I.	Oc.	Dis.			18	11	59.8	II.	Ec.	Re.		4	48		II.	Oc.	Dis.
	5	7		IV.	Oc.	Dis.			20	8		I.	Tr.	In.		10	4	42.0	II.*	Ec.	Re.
	5	50	9.5	I.	Ec.	Re.			21	15		I.	Sh.	In.		10	55		I.*	Tr.	In.
	9	46		IV.*	Oc.	Re.			22	28		I.	Tr.	Eg.		12	7		I.*	Sh.	In.
	14	41	12.3	IV.*	Ec.	Dis.			23	35		I.	Sh.	Eg.		13	15		I.*	Tr.	Eg.
	15	42		II.*	Tr.	In.		20	17	17		I.	Oc.	Dis.		14	27		I.	Sh.	Eg.
	17	40		II.	Sh.	In.			20	43	0.7	I.	Ec.	Re.		31	8	5	I.*	Oc.	Dis.
	18	37		II.	Tr.	Eg.		21	7	22		II.*	Tr.	In.		11	36	4.6	I.*	Ec.	Re.
	19	18	56.7	IV.	Ec.	Re.			9	36		II.*	Sh.	In.		23	7		II.	Tr.	In.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

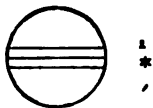
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

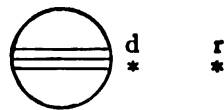
MARCH.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



III.



II.



IV.

*Configurations at 12^h 0^m for an Inverting Telescope.*

Day.	West.		East.	
1		'2 3'	○	'1 4'
2		3' 4' 1'	○	'2
3		4' 3'	○	2' '1
4	4'	2' '1 '3	○	
5	4'		○	1' '3
6	'4	'1	○	2' '3
7	○ 1' '4	2'	○	3'
8	'4	'2 3'	○	'1
9	3' '4 1'		○	'2
10	'3		○	'4 2' '1
11		2' 1' '3	○	'4
12			○	1' '3 '4 '2 ●
13		'1	○	2' '3 '4
14		2'	○	1' 3' '4
15	○ 3'	'2	○	4' '1 ●
16		3' 1'	○	'2 4'
17	'3		○	'12' 4'
18		2' '3 1'	○	4'
19		4' '2	○	1' 2
20	4'	'1	○	'2 '3
21	4'	2'	○	1' 3'
22	4'	'2 '1	○	3'
23	○ 1' '4	3'	○	'2
24	'4 '3		○	'1 2'
25	'4 '32'	1'	○	
26		'4 '2	○	'3 '1
27		'1	○	'4 '2 '3
28	○ 2'		○	1' 3' '4
29		'2 '1	○	3' '4
30	○ 1'	3'	○	'2 '4
31	3'		○	'1 2' 4'

WASHINGTON MEAN TIME.

APRIL.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	1	31		II.	11	2	29	11.9	I.	20	18	55		I.	21	18	55		I.
2	2			II.		14	58		II.		20	12		I.		20	12		I.
4	27			II.		17	28		II.		22	47		IV.		22	47		IV.
5	23			I.		17	52		II.		21	3	27	IV.		21	3	27	IV.
6	36			I.		20	12		I.		10	55		IV.*		10	55		IV.*
7	43			I.*		20	24		II.		13	47		I.		13	47		I.
8	56			I.*		21	29		I.		15	45		IV.		15	45		IV.
9	2	33		I.		22	32		I.		17	22	25.2	I.		17	22	25.2	I.
10	5	57		III.		23	49		I.		22	6	54	II.		22	6	54	II.
11	6	4	58.5	I.		12	15	34	IV.		9	24		II.*		9	24		II.*
12	9	35		III.*		17	23		I.		9	49		II.*		9	49		II.*
13	11	0	25.3	III.*		19	13		IV.		11	4		I.*		11	4		I.*
14	13	32	57.5	III.		20	58	7.2	I.		12	20		II.*		12	20		II.*
15	18	3		II.		23	53		III.		12	21		I.*		12	21		I.*
16	23	22	14.0	II.		13	2	48	IV.		13	24		I.		13	24		I.
17	23	51		I.		3	31		III.		14	41		I.		14	41		I.
18	1	5		I.		5	1		III.		23	8	16	I.*		23	8	16	I.*
19	2	11		I.		7	30	6.3	IV.*		11	51	20.1	I.*		11	51	20.1	I.*
20	3	25		I.		8	43		III.*		17	46		III.		17	46		III.
21	1			I.		9	51		II.*		21	25		III.		21	25		III.
22	0	33	45.7	I.		14	40		I.		23	1	8.3	III.		23	1	8.3	III.
23	5	8		IV.		15	14	41.6	II.		1	43		II.		1	43		II.
24	9	47		IV.*		15	57		I.		2	34	20.0	III.		2	34	20.0	III.
25	12	24		II.*		17	0		I.		5	33		I.		5	33		I.
26	14	50		II.*		18	17		I.		6	49		I.		6	49		I.
27	15	19		II.		14	11	52	I.		7	7	1.5	II.		7	7	1.5	II.
28	16	54		IV.		15	26	56.8	I.		7	53		I.*		7	53		I.*
29	17	46		II.		15	4	16	II.		9	9		I.*		9	9		I.*
30	18	19		I.		7	11		II.		2	45		I.		2	45		I.
31	19	34		I.		9	9		II.*		6	20	7.9	I.		6	20	7.9	I.
32	20	39		I.		9	9		I.*		20	13		II.		20	13		II.
33	21	42		IV.		9	42		II.*		22	43		II.		22	43		II.
34	21	54		I.		10	26		I.*		23	8		II.		23	8		II.
35	19	2	40.9	I.		11	29		I.*		26	0	2	I.		26	0	2	I.
36	19	59		I.		12	46		I.*		1	18		I.		1	18		I.
37	23	37		III.		16	6	21	I.*		1	40		II.		1	40		II.
38	1	2		III.		9	55	51.7	I.*		2	22		I.		2	22		I.
39	4	44		III.		13	46		III.		3	38		I.		3	38		I.
40	7	18		III.*		17	24		III.		21	14		I.		21	14		I.
41	12	39	44.0	II.*		19	0	44.0	III.		7	52		I.		7	52		I.
42	12	47		II.*		22	33	43.5	III.		11	30		III.*		11	30		III.*
43	14	3		I.*		23	8		II.		13	0		III.		13	0		III.
44	15	7		I.		17	3	38	I.		15	1		II.		15	1		II.
45	16	23		I.		4	32	9.7	II.		16	42		I.		16	42		I.
46	7	9	58	I.*		4	55		I.		18	31		I.		18	31		I.
47	13	31	30.2	I.*		5	58		I.*		19	47		I.		19	47		I.
48	1	41		II.		7	15		I.		20	24	25.2	II.		20	24	25.2	II.
49	4	9		II.		18	0	49	I.		20	51		I.		20	51		I.
50	4	36		II.		17	35	39.6	II.		22	7		I.		22	7		I.
51	7	5		II.*		20	5		II.		15	43		I.		15	43		I.
52	7	15		I.*		20	30		II.		19	17	53.3	I.		19	17	53.3	I.
53	8	31		I.*		22	6		I.		20	8	41	IV.*		20	8	41	IV.*
54	9	35		I.*		23	1		II.		9	32		II.*		9	32		II.*
55	10	51		I.*		23	23		I.		12	2		II.*		12	2		II.*
56	4	26		I.		19	0	26	I.		12	27		II.		12	27		II.
57	8	0	24.6	I.*		1	43		I.		13	0		I.		13	0		I.
58	9	49		III.*		19	19		I.		13	22		IV.		13	22		IV.
59	13	27		III.*		22	53	35.3	I.		14	15		I.		14	15		I.
60	15	0	43.4	III.		3	50		III.		14	58		II.		14	58		II.
61	18	33	29.8	III.		7	29		III.*		15	20		I.		15	20		I.
62	20	34		II.		9	1		III.*		16	35		I.		16	35		I.
63	1	43		I.		12	25		II.*		20	51	22.5	IV.		20	51	22.5	IV.
64	1	57	14.4	II.		12	43		III.*		10	13		I.*		10	13		I.*
65	3	0		I.		16	35		I.		13	46	48.5	I.		13	46	48.5	I.
66	4	3		I.		17	49	35.0	II.		21	50		III.		21	50		III.
67	5	20		I.		17	52		I.										
68	22	55		I.															

NOTE.—In, denotes ingress; Eg, egress; Dis, disappearance; Re, reappearance; Ec, eclipse.

Oc, denotes occultat

* the satellite; Sh, transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

MAY.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	1	29		III.	11	16	6		III.	21	19	33	4.7	I.	22	10	21		III.*
	3	0	56.0	III.		19	45		III.		12	19		II.		13	21		III.
	4	19		II.		20	18		II.		13	21		I.		14	1		III.
	6	34	18.3	III.		20	59		III.		14	28		I.		15	41		III.
	7	29		I.*		22	23		I.		15	59	51.6	I.		16	48		I.
	8	44		I.*		23	36		I.		16	48		I.		17	25	52.6	II.
	9	41	49.6	II.*	12	0	42		III.		17	25		II.		18	33	39.4	III.
	9	49		I.*		0	43		I.		18	33		I.*		19	3	50.5	I.
	11	4		I.*		1	33	54.1	II.		19	3		II.		20	10		II.
	2	4	42	I.		1	56		I.		20	10		I.		21	17		II.
	8	15	36.2	I.*		19	38		I.		21	17		I.		22	10		II.
	22	52		II.		23	8	47.1	I.		22	10		I.		23	10		II.
	3	1	21	II.	13	14	57		II.		23	10		I.		24	7	3	III.
	1	47		II.		16	53		I.		24	7	3	II.		25	5	6	II.
	1	58		I.		17	18		II.		25	5	6	I.*		26	0	32	III.
	3	12		I.		17	52		II.		26	0	32	II.		27	2	59	III.
	4	17		II.		18	5		I.		27	2	59	I.		28	14	37	III.
	4	18		I.		19	13		I.		28	14	37	I.		29	15	2	III.
	5	32		I.		20	14		II.		29	15	2	I.		30	15	20	III.
	23	11		I.		20	25		I.		30	15	20	I.		31	9	49	II.*
	4	2	44	I.	14	14	8		I.		31	9	49	I.*					I.
	11	57	31.5	III.*		17	37	41.5	I.					II.					II.
	15	36		III.	15	6	7		III.					IV.					IV.
	17	0		III.		9	38		II.*					IV.					IV.
	17	39		II.		9	47		III.*					I.					I.
	20	27		I.		11	0	10.0	III.*					I.					I.
	20	42		III.		11	22		I.*					I.					I.
	21	41		I.		12	33		I.					II.					II.
	22	47		I.		13	42		I.					I.					I.
	22	59	11.7	II.		14	33	50.6	III.					I.					I.
	5	0	2	I.		14	51	14.1	II.					I.					I.
	17	40		I.		14	54		I.					I.					I.
	21	13	21.0	I.	16	3	34		IV.					I.					I.
	12	13		II.		8	16		IV.*					I.					I.
	14	40		II.		8	37		I.*					I.					I.
	14	56		I.		12	6	28.0	I.					I.					I.
	15	8		II.		14	55	3.6	IV.					I.					I.
	16	10		I.		19	39	59.6	IV.					I.					I.
	17	16		I.	17	4	19		II.					I.					I.
	17	36		II.		5	52		I.					I.					I.
	18	30		I.		6	37		II.					I.					I.
	7	12	10	I.		7	2		I.					I.					I.
	15	42	15.8	I.		7	14		II.					I.					I.
	17	15		IV.		8	12		I.*					I.					I.
	21	56		IV.		9	22		I.*					I.					I.
	8	1	57	III.		9	33		II.*					I.					I.
	4	56		IV.	18	3	7		I.					I.					I.
	5	36		III.		6	35	22.4	I.					I.					I.
	6	58		II.		20	17		III.					I.					I.
	7	0	34.5	III.		22	59		II.					I.					I.
	9	25		I.*		23	57		III.					I.					I.
	9	48		IV.*	19	0	22		I.					I.					I.
	10	34	6.5	III.*		0	59		III.					I.					I.
	10	39		I.*		1	31		I.					I.					I.
	11	45		I.*		2	42		I.					I.					I.
	12	16	33.7	II.		3	52		I.					I.					I.
	13	0		I.		4	8	33.5	II.					I.					I.
	9	6	39	I.		4	41		III.					I.					I.
	10	11	3.0	I.*		21	37		I.					I.					I.
	10	1	35	II.	20	1	4	10.7	I.					I.					I.
	3	54		I.		17	41		II.					I.					I.
	3	59		II.		18	51		I.					I.					I.
	4	30		II.		19	55		II.					I.					I.
	5	7		I.		19	59		I.					I.					I.
	6	14		I.		20	36		II.					I.					I.
	6	56		II.		21	11		I.					I.					I.
	7	27		I.		22	20		I.					I.					I.
	11	1	9	I.		22	51		II.					I.					I.
	4	39	58.0	I.	21	16	6		I.					I.					I.

NOTE.—In, denotes ingress; Eg, egress; Dis, disappearance; Re, reappearance; Ec, eclipse.

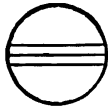
Oc, denotes occultation; Tr, transit of the satellite; Sh, transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

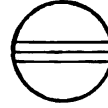
MAY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

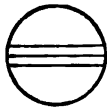
I.

r
*

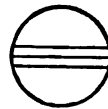
III.

d
* r
*

II.

r
*

IV.

d
* r
**Configurations at 9^h 30^m for an Inverting Telescope.*

Day.	West.	East.
1	○ 1'	○ '2 '3 '4
2		○ '1 2' '3 '4
3	2' 1'	○ 3' '4
4	'2	○ 3' '1 '4
5	3' '1	○ '2 '4
6	'3	○ 2' 1' '4
7	2' 1' '1	○ '4
8	○ 1' '4	○ '3 '2 ●
9	'4	○ '1 2' '3
10	'4 '1	○ 3'
11	'4 '2	○ 3' '1
12	'4 3' 1'	○ '2
13	'4 3'	○ 2' 1'
14	'4 '3 2' '1	○
15	'4 '2	○ 1' '3 ●
16		○ '4 2' '3 '1 ●
17	1' '1	○ '4 3'
18	'2	○ '1 3' '4
19	1' '1	○ '2 '4
20	3'	○ 1' '4
21	'3 2' '1	○ '4
22	'2 '3	○ 1' '4
23	'1	○ '2 '3 '4
24	○ 2' ○ 1'	○ 4' 3'
25	'2 4'	○ '1 3'
26	'4 1' '1	○ '2
27	'4 3'	○ '12'
28	'4 '3 2' '1	○
29	'4 1' '1	○ 1'
30	'4 '1	○ '2 '3
31	'4	○ 1' 3'

WASHINGTON MEAN TIME.

JUNE.

d	h	m	s				d	h	m	s				d	h	m	s			
1	7	5		I.	Oc.	Dis.	11	0	48		I.	Tr.	In.	20	18	36		I.	Oc.	Dis.
	10	26	2	I.*	Ec.	Re.		1	44		I.	Sh.	In.		21	42	41.5	I.	Ec.	Re.
23	4			IV.	Oc.	Dis.		1	59		II.	Tr.	In.	21	15	48		I.	Tr.	In.
2	3	49		IV.	Oc.	Re.		3	8		I.	Tr.	Eg.		16	36		I.	Sh.	In.
	4	19		I.	Tr.	In.		3	48		II.	Sh.	In.		18	8		I.	Tr.	Eg.
	4	23		II.	Oc.	Dis.		4	4		I.	Sh.	Eg.		18	11		II.	Tr.	In.
	4	48		III.	Tr.	In.		4	55		II.	Tr.	Eg.		18	56		I.	Sh.	Eg.
	5	21		I.	Sh.	In.		6	44		II.	Sh.	Eg.		19	44		II.	Sh.	In.
	6	39		I.	Tr.	Eg.		22	6		I.	Oc.	Dis.		21	7		II.	Tr.	Eg.
	7	41		I.	Sh.	Eg.	12	1	18	52.9	I.	Ec.	Re.		22	40		II.	Sh.	Eg.
	8	28		III.*	Tr.	Eg.		19	18		I.	Tr.	In.	22	13	7		I.	Oc.	Dis.
	8	57		III.*	Tr.	In.		20	13		I.	Sh.	In.		16	11	29.9	I.	Ec.	Re.
	8	57	56.5	IV.*	Ec.	Dis.		20	29		II.	Oc.	Dis.	23	10	18		I.	Tr.	In.
	9	17	46.5	II.*	Ec.	Re.		21	38		I.	Tr.	Eg.		11	4		I.	Sh.	In.
	12	40		III.	Sh.	Eg.		22	33		I.	Sh.	Eg.		12	38		II.	Oc.	Dis.
	13	43	53.5	IV.	Ec.	Re.		23	17		III.	Oc.	Dis.		12	38		I.	Tr.	Eg.
8	1	35		I.	Oc.	Dis.	18	1	9	36.6	II.	Ec.	Re.		13	24		I.	Sh.	Eg.
	4	54	48.8	I.	Ec.	Re.		2	57		III.	Oc.	Re.		17	1	27.0	II.	Ec.	Re.
	22	49		I.	Tr.	In.		3	0	1.0	III.	Ec.	Dis.		17	50		III.	Tr.	In.
	23	12		II.	Tr.	In.		6	34	5.3	III.	Ec.	Re.		20	55		III.	Sh.	In.
	23	49		I.	Sh.	In.		16	36		I.	Oc.	Dis.		21	31		III.	Tr.	Eg.
4	1	9		I.	Tr.	Eg.		19	47	35.7	I.	Ec.	Re.	24	0	37		III.	Sh.	Eg.
	1	10		II.	Sh.	In.	14	13	48		I.	Tr.	In.		7	37		I.	Oc.	Dis.
	2	8		II.	Tr.	Eg.		14	41		I.	Sh.	In.		10	40	12.9	I.	Ec.	Re.
	2	9		I.	Sh.	Eg.		15	23		II.	Tr.	In.	25	4	48		I.	Tr.	In.
	4	6		II.	Sh.	Eg.		16	8		I.	Tr.	Eg.		5	33		I.	Sh.	In.
	20	5		I.	Oc.	Dis.		17	1		I.	Sh.	Eg.		7	8		I.	Tr.	Eg.
	23	23	41.0	I.	Ec.	Re.		17	6		II.	Sh.	In.		7	35		II.	Tr.	In.
5	17	19		I.	Tr.	In.		18	19		II.	Tr.	Eg.		7	53		I.*	Sh.	Eg.
	17	45		II.	Oc.	Dis.		20	3		II.	Sh.	Eg.		9	2		II.	Sh.	In.
	18	18		I.	Sh.	In.	15	11	6		I.	Oc.	Dis.		10	31		II.	Tr.	Eg.
	18	56		III.	Oc.	Dis.		14	16	25.7	I.	Ec.	Re.		11	58		II.	Sh.	Eg.
	19	39		I.	Tr.	Eg.	16	8	18		I.*	Tr.	In.	26	2	7		I.	Oc.	Dis.
	20	38		I.	Sh.	Eg.		9	10		I.*	Sh.	In.		5	9	1.7	I.	Ec.	Re.
	22	35	3.1	II.	Ec.	Re.		9	52		II.	Oc.	Dis.		23	18		I.	Tr.	In.
	22	36		III.	Oc.	Re.		10	38		I.	Tr.	Eg.	27	0	1		I.	Sh.	In.
	22	59	55.5	III.	Ec.	Dis.		11	30		I.	Sh.	Eg.		1	38		I.	Tr.	Eg.
6	2	33	55.0	III.	Ec.	Re.		13	27		III.	Tr.	In.		2	1		II.	Oc.	Dis.
	14	35		I.	Oc.	Dis.		14	26	53.8	II.	Ec.	Re.		2	21		I.	Sh.	Eg.
	17	52	25.1	I.	Ec.	Re.		16	55		III.	Sh.	In.		4	12		IV.	Tr.	In.
7	11	49		I.	Tr.	In.		17	8		III.	Tr.	Eg.		6	18	43.0	II.	Ec.	Re.
	12	35		II.	Tr.	In.		20	38		III.	Sh.	Eg.		8	1		III.	Oc.	Dis.
	12	47		I.	Sh.	In.	17	5	36		I.	Oc.	Dis.		9	2		IV.	Tr.	Eg.
	14	9		I.	Tr.	Eg.		8	45	9.9	I.*	Ec.	Re.		10	59		IV.	Sh.	In.
	14	29		II.	Sh.	In.	18	2	48		I.	Tr.	In.		14	32	47.2	III.	Ec.	Re.
	15	7		I.	Sh.	Eg.		3	39		I.	Sh.	In.		15	54		IV.	Sh.	Eg.
	15	31		II.	Tr.	Eg.		4	47		II.	Tr.	In.		20	37		I.	Oc.	Dis.
	17	26		II.	Sh.	Eg.		5	8		I.	Tr.	Eg.		23	37	41.9	I.	Ec.	Re.
8	9	5		I.*	Oc.	Dis.		5	59		I.	Sh.	Eg.	28	17	48		I.	Tr.	In.
	12	21	16.2	I.	Ec.	Re.		6	25		II.	Sh.	In.		18	30		I.	Sh.	In.
9	6	19		I.	Tr.	In.		7	43		II.	Tr.	Eg.		20	8		I.	Tr.	Eg.
	7	7		II.	Oc.	Dis.		9	21		II.*	Sh.	Eg.		20	50		I.	Sh.	Eg.
	7	16		I.	Sh.	In.		20	3		IV.	Oc.	Dis.		20	59		II.	Tr.	In.
	8	39		I.*	Tr.	Eg.		23	50		IV.	Oc.	Re.		22	21		II.	Sh.	In.
	9	7		III.*	Tr.	In.	19	0	6		I.	Oc.	Dis.		23	55		II.	Tr.	Eg.
	9	36		I.	Sh.	Eg.		3	0	29.1	IV.	Ec.	Dis.	29	1	17		II.	Sh.	Eg.
	11	52	20.7	II.	Ec.	Re.		3	13	59.8	I.	Ec.	Re.		15	8		I.	Oc.	Dis.
	12	47		III.	Tr.	Eg.		7	47	8.0	IV.*	Ec.	Re.		18	6	28.8	I.	Ec.	Re.
	12	56		III.	Sh.	In.		21	18		I.	Tr.	In.	30	12	19		I.	Tr.	In.
	16	39		III.	Sh.	Eg.		22	7		I.	Sh.	In.		12	59		I.	Sh.	In.
10	3	35		I.	Oc.	Dis.		23	15		II.	Oc.	Dis.		14	39		I.	Tr.	Eg.
	6	50	1.7	I.	Ec.	Re.		23	38		I.	Tr.	Eg.		15	19		I.	Sh.	Eg.
	8	5		IV.*	Tr.	In.	20	0	28		I.	Sh.	Eg.		15	24		II.	Oc.	Dis.
	12	52		IV.	Tr.	Eg.		3	38		III.	Oc.	Dis.		19	36	0.6	II.	Ec.	Re.
	16	58		IV.	Sh.	In.		3	44	9.5	II.	Ec.	Re.		22	14		III.	Tr.	In.
	21	53		IV.	Sh.	Eg.		10	33	33.0	III.	Ec.	Re.							

Re, reappearance; Ec, eclipse.

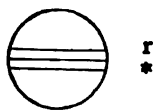
* Visible at Washington.

WASHINGTON MEAN TIME.

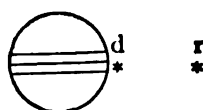
JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



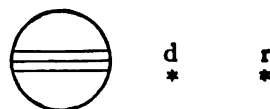
III.



II.



IV.

*Configurations at 9^h 0^m for an Inverting Telescope.*

Day.	West.	East.
1	'2 '4	○ 3' '1●
2		○ '2 '4
3	3'	○ '1 2' '4
4	'3	○ '4
5		○ 1' '4
6	'1	○ '3 '2 4'
7		○ 1' '3 4'
8	2' '1	○ 3' 4'
9	'1	○ 3' 4' '2●
10	3'	○ 4' '1 2'
11	'3 4' 1' 2'	○
12	4' 3'	○ '1
13	4' '1	○ '3 '2
14	4' 1' '3	○
15	'4 2' '1	○ 3'
16	○ 1' '4 '2	○ 3'
17	'4 3'	○ '1 2'
18	3' 4' 1' 2'	○
19	'3 '2	○ '4 '1
20	1'	○ '3 '2 '4
21		○ 1' 2' '3 '4
22	2' '1	○ 3' 4'
23	'2	○ 1' 3' 4'
24	3'	○ '2 4' '1●
25	○ 2' 3' 1'	○ 4'
26	'3 '2	○ '1 4'
27	○ 4' 1'	○ '2 '3●
28	4'	○ 1' 2' '3
29	4' 2' '1	○ 3'
30	4' '2	○ 1' 3'

JUPITER'S SATELLITES, 1896.

WASHINGTON MEAN TIME.

JULY.

d	h	m	s				d	h	m	s				d	h	m	s			
1	0	54		III.	Sh.	In.	5	20	12		IV.	Oc.	Re.	9	11	42		I.	Sh.	Eg.
	1	55		III.	Tr.	Eg.		20	24		I.	Sh.	In.		13	14		II.	Tr.	In.
	4	37		III.	Sh.	Eg.		21	3	12.0	IV.	Ec.	Dis.		14	16		II.	Sh.	In.
	9	38		I.	Oc.	Dis.		22	9		I.	Tr.	Eg.		16	10		II.	Tr.	Eg.
	12	35	10.6	I.	Ec.	Re.		22	44		I.	Sh.	Eg.		17	12		II.	Sh.	Eg.
2	6	49		I.	Tr.	In.		23	49		II.	Tr.	In.	10	6	9		I.	Oc.	Dis.
	7	27		I.	Sh.	In.	6	0	58		II.	Sh.	In.		8	58	47.7	I.	Ec.	Re.
	9	9		I.	Tr.	Eg.		1	50	14.5	IV.	Ec.	Re.	11	3	20		I.	Tr.	In.
	9	47		I.	Sh.	Eg.		2	45		II.	Tr.	Eg.		3	50		I.	Sh.	In.
	10	24		II.	Tr.	In.		3	54		II.	Sh.	Eg.		5	40		I.	Tr.	Eg.
	11	39		II.	Sh.	In.		17	9		I.	Oc.	Dis.		6	11		I.	Sh.	Eg.
	13	20		II.	Tr.	Eg.		20	1	22.1	I.	Ec.	Re.		7	34		II.	Oc.	Dis.
	14	35		II.	Sh.	Eg.	7	14	19		I.	Tr.	In.		11	27	52.4	II.	Ec.	Re.
3	4	8		I.	Oc.	Dis.		14	53		I.	Sh.	In.		16	51		III.	Oc.	Dis.
	7	3	57.7	I.	Ec.	Re.		16	39		I.	Tr.	Eg.		22	31	4.0	III.	Ec.	Re.
4	1	19		I.	Tr.	In.		17	13		I.	Sh.	Eg.	12	0	39		I.	Oc.	Dis.
	1	56		I.	Sh.	In.		18	11		II.	Oc.	Dis.		3	27	25.3	I.	Ec.	Re.
	3	39		I.	Tr.	Eg.		22	10	34.8	II.	Ec.	Re.		21	50		I.	Tr.	In.
	4	16		I.	Sh.	Eg.	8	2	39		III.	Tr.	In.		22	18		I.	Sh.	In.
	4	47		II.	Oc.	Dis.		4	53		III.	Sh.	In.	13	0	10		I.	Tr.	Eg.
	8	53	17.3	II.*	Ec.	Re.		6	21		III.	Tr.	Eg.		0	39		I.	Sh.	Eg.
	12	26		III.	Oc.	Dis.		8	36		III.*	Sh.	Eg.		2	39		II.	Tr.	In.
	18	31	55.2	III.	Ec.	Re.		11	39		I.	Oc.	Dis.		3	35		II.	Sh.	In.
	22	38		I.	Oc.	Dis.		14	30	2.2	I.	Ec.	Re.		5	35		II.	Tr.	Eg.
5	1	32	36.7	I.	Ec.	Re.	9	8	49		I.	Tr.	In.		6	31		II.	Sh.	Eg.
	15	20		IV.	Oc.	Dis.		9	22		I.	Sh.	In.		19	10		I.	Oc.	Dis.
	19	49		I.	Tr.	In.		11	9		I.	Tr.	Eg.		21	56	9.1	I.	Ec.	Re.

THE SATELLITES OF JUPITER

ARE NOT VISIBLE FROM JULY 14TH UNTIL SEPTEMBER 9TH,

JUPITER BEING TOO NEAR TO THE SUN.

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JULY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



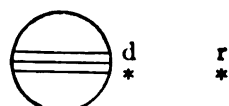
III.



II.



IV.

*Configurations at 8^h 0^m for an Inverting Telescope.*

Day.	West.				East.			
1	4'		3'	'1	○		'2	
2	○ 1'	'4	3'		○	2'		
3		'4	3'	2'	○	'1		
4			'4	1'	○	2'		
5				'4	○	'1	'3	
6				'12'	○	'4		'3
7				'2	○	1'	3'	'4
8				'13'	○	'2		'4
9		3'			○	1'	2'	'4
10		'3	2'		○			4' '1 ●
11			'3	1'	○			4' '2 ●
12					○	'1	'3 2'	4'
13				'1 2'	○	4'	'3	

WASHINGTON MEAN TIME.

SEPTEMBER.

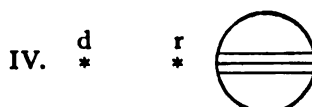
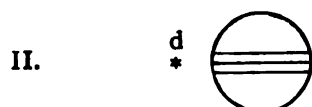
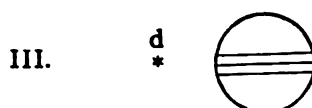
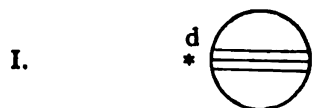
d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
9	8	1		I.	16	12	48		I.	23	23	42	24.4	II.	24	3	59		II.
	8	28		I.		21	7	18.2	II.		9	10	25.1	II.		9	10	25.1	I.
	10	21		I.	17	7	16	46.4	II.		12	10		I.		12	10		I.
	10	48		I.		10	10		I.	25	0	36		III.					III.
	18	32	17.0	II.		20	38		III.		3	27		III.		3	27		III.
10	22	23		II.		23	4		III.		4	18		III.		4	18		III.
	5	23	1.0	I.	18	0	20		III.		6	17		I.		6	17		I.
	8	10		I.		2	46		III.		6	58		I.		6	58		I.
	16	39		III.*		4	23		I.		7	9		III.		7	9		III.
	18	39		III.		4	58		I.		8	37		I.		8	37		I.
	20	22		III.		6	43		I.		9	18		I.		9	18		I.
	21	7	24.2	IV.		7	18		I.		18	48		II.		18	48		II.
	22	21		III.		16	14		II.*		20	15		II.		20	15		II.
11	2	29		I.		17	28		II.		21	44		II.		21	44		II.
	2	58		I.		19	10		II.		23	11		II.		23	11		II.
	4	49		I.		20	24		II.	26	3	38	52.0	I.		3	38	52.0	I.
	5	18		I.	19	1	45	14.9	I.		6	40		I.		6	40		I.
	6	42		IV.		4	40		I.	27	0	45		I.		0	45		I.
	13	39		II.		4	52		IV.		1	28		I.		1	28		I.
	14	40		II.		9	47		IV.		3	5		I.		3	5		I.
	16	35		II.*		10	48		IV.		3	48		I.		3	48		I.
	17	36		II.		15	42		IV.		13	0	17.3	II.		13	0	17.3	II.
	23	51	31.2	I.		22	51		I.		15	7	7.6	IV.		15	7	7.6	IV.
12	2	40		I.		23	28		I.		17	23		II.*		17	23		II.*
	20	57		I.	20	1	11		I.		19	51	38.0	IV.		19	51	38.0	IV.
	21	28		I.		1	48		I.		22	7	13.1	I.		22	7	13.1	I.
	23	17		I.		10	25	6.5	II.		22	10		IV.		22	10		IV.
	23	48		I.		14	36		II.	28	1	10		I.		1	10		I.
13	7	50	0.8	II.		20	13	37.4	I.		3	3		IV.		3	3		IV.
	11	48		II.		23	10		I.		14	42	56.2	III.		14	42	56.2	III.
	18	19	55.2	I.	21	10	45	1.5	III.		19	13		I.		19	13		I.
	21	10		I.		17	1		III.*		19	58		I.		19	58		I.
14	6	46	25.4	III.		17	20		I.*		21	23		III.		21	23		III.
	12	36		III.		17	58		I.		21	33		I.		21	33		I.
	15	26		I.		19	40		I.		22	18		I.		22	18		I.
	15	58		I.*		20	18		I.	29	8	5		II.		8	5		II.
	17	46		I.		5	31		II.		9	38		II.		9	38		II.
	18	18		I.	22	6	52		II.		11	1		II.		11	1		II.
15	2	56		II.		8	27		II.		12	33		II.		12	33		II.
	4	4		II.		9	48		II.		16	35	36.7	I.*		16	35	36.7	I.*
	5	52		II.		14	42	3.0	I.		19	40		I.		19	40		I.
	7	0		II.		17	40		I.	30	13	42		I.		13	42		I.
	12	48	22.6	I.	23	11	48		I.		14	28		I.		14	28		I.
	15	40		I.		12	28		I.		16	2		I.*		16	2		I.*
16	9	54		I.		14	8		I.		16	48		I.*		16	48		I.*
	10	28		I.		14	49		I.										
	12	14		I.															

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Wash.

WASHINGTON MEAN TIME.

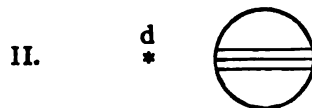
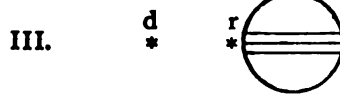
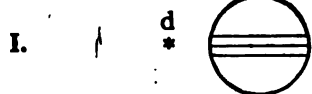
SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 16ⁿ 30^m for an Inverting Telescope.*

Day.	West.	East.
9	'4	1' 2' 0 3'
10		'4 0 3' 1' 2'
11	0 2'	3' 1' 0 4'
12	'3	'2 0 1' 4'
13	'3	'1 0 2' 4'
14	0 1'	' 0 3' 2' 4'
15		2' 0 1' 3' 4'
16		1' 0 3' 4'
17		0 3' 1' 2' 4'
18	'3 1'	0 2' 4'
19	0 4' 3' 2'	0 1'
20	'4 1' 0 2'	
21	4' 0 1' 2'	3' ●
22	4' 2' 0	'3 1' ●
23	4' 2' 1' 0	3'
24	'4	0 1' 3' 2'
25	'4	0 2'
26	3' 4' 2'	0 1'
27	'3	1' 4' 0 2' ●
28		3' 0 1' 4' 2'
29		2' 1' 0 3' 4'
30	0 1' 2' 0	3' 4'

WASHINGTON MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 16^h 0^m for an Inverting Telescope.*

Day.	West.				East.			
1				○	'1	'2	'3	'4
2			1' 3'	○		2'		4'
3		3'	2'	○	'1			4'
4		'3		'1	'2	○		4'
5			'3	○	'1	4'	'2	
6			'1 6'	○		'3		
7		4'	'2	○	'1		'3	
8		4'		○	'2	3'		'1 ●
9	4'		1' 3'	○	2'			
10	'4	3'	2'	○	'1			
11	'4	3'		'1	'2	○		
12		'4		'3	○	'1	'2	
13	○ 2'		'4	'1	○	'3		
14			'2	'4	○	'1		'3
15				○	'2	'4	3'	'1 ●
16				'1	○ 3'	2'		'4
17		3'	2'	○	'1			'4
18		'3		1' 3'	○			'4
19			'3	○	'1	'2		4'
20			'1	○	2'	'3		4'
21		2'		○	'1		'3	4'
22			'1	○	'2	4'	3'	
23	○ 1'		4'	○	3'	2'		
24		4'	3'	2'	○	'1		
25		4'	3'	'2	1'	○		
26	4'		'3		'1	'2		
27	'4		'1	○	'3	2'		
28	'4		2'	○	'1		'3	
29		'4		'1	○		3'	'2 ●
30			'4	○	'1	3'	2'	
31			3'	2'	○			'4 ● '1 ●

WASHINGTON MEAN TIME.

NOVEMBER.

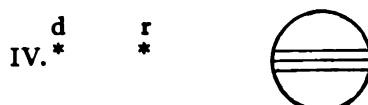
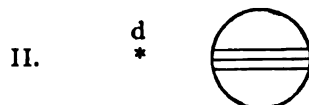
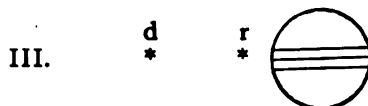
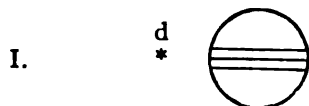
d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	10	13		I.	11	2	23		II.	21	12	0		III.	12	0		III.	
11	21			I.	3	54	58.1		I.	13	22			III.*	13	22		III.*	
12	33			I.	4	48			II.	15	17			II.*	15	17		II.*	
13	41			I.*	7	24			I.	16	56			III.*	16	56		III.*	
2	1	57	23.0	II.	1	3		12	I.	17	49			II.*	17	49		II.*	
7	9			II.	2	15			I.	18	12			II.*	18	12		II.*	
7	33	40.1		I.	3	23			I.	18	44	25.5		I.	18	44	25.5	I.	
10	59			I.	4	34			I.	20	42			II.	20	42		II.	
8	4	41		I.	17	50	23.1		II.*	22	16			I.	22	16		I.	
5	50			I.	22	23	11.6		I.	23	15	53		I.*	23	15	53	I.*	
7	1			I.	23	10			II.	17	8			I.*	17	8		I.*	
8	10			I.	1	53		13	I.	18	13			I.*	18	13		I.*	
10	31	58.2		III.	19	32			I.	19	27			I.	19	27		I.	
14	3	32.8		III.*	20	44			I.	21	9	44	32.6	II.	21	9	44	II.	
15	8			III.*	21	52			I.	13	12	39.3		I.*	13	12	39.3	I.*	
18	45			III.	23	3			I.	15	8			II.*	15	8		II.*	
20	55			II.	4	22		14	III.	16	44			I.*	16	44		I.*	
23	15			II.	8	2			III.	24	10	22		I.	24	10	22	I.	
23	51			II.	9	18			III.	11	36			I.	11	36		I.	
4	2	1	56.3	I.	12	44			II.	12	42			I.*	12	42		I.*	
2	9			II.	12	53			III.	13	55			I.*	13	55		I.*	
5	28			I.	15	13			II.*	22	24	29.0		III.	22	24	29.0	III.	
23	9			I.	15	39			II.*	1	55	7.0		III.	1	55	7.0	III.	
5	0	19		I.	16	51	28.5		I.*	3	25			III.	3	25		III.	
1	29			I.	18	6			II.*	4	34			II.	4	34		II.	
2	38			I.	20	21			I.	4	40			IV.	4	40		IV.	
15	14	33.4		II.*	14	0		15	I.*	6	59			III.	6	59		III.	
20	29			II.	15	13			I.*	7	7			II.	7	7		II.	
20	30	10.5		I.	16	20			I.*	7	29			II.	7	29		II.	
23	57			I.	17	32			I.*	7	40	52.8		I.	7	40	52.8	I.	
6	17	38		I.*	7	8	25.0		II.	9	30			IV.	9	30		IV.	
18	48			I.	11	19	42.2		I.	10	0			II.	10	0		II.	
19	58			I.	12	30			II.	11	13			I.	11	13		I.	
21	7			I.	14	50			I.*	16	36			IV.*	16	36		IV.*	
7	0	24		III.	21	4	30.4		IV.	21	9			IV.	21	9		IV.	
4	4			III.	1	43	55.4		IV.	23	1			I.	23	1		I.	
5	10			III.	8	28			I.	6	5			I.	6	5		I.	
8	46			III.	8	48			IV.	7	10			I.	7	10		I.	
10	11			II.	9	42			I.	8	24			I.	8	24		I.	
12	35			II.	10	48			I.	23	1	56.0		II.	23	1	56.0	II.	
13	7			II.	12	1			I.	4	26			I.	4	26		I.	
14	58	28.2		I.*	13	25			IV.*	5	41			II.	5	41		II.	
15	29			II.*	18	27	17.3		III.*	23	18			I.	23	18		I.	
18	26			I.	21	58	15.1		III.	23	34			I.	23	34		I.	
8	10	44		IV.	23	23			III.	23	34			I.	23	34		I.	
12	6			I.	2	0		18	II.	1	38			I.	1	38		I.	
13	17			I.	2	58			III.	2	53			I.	2	53		I.	
14	26			I.*	4	31			II.	12	18			III.	12	18		III.	
15	35			IV.*	4	56			II.	15	57			III.*	15	57		III.*	
15	36			I.*	5	47	56.6		I.	17	23			III.*	17	23		III.*	
22	3			IV.	7	24			II.	17	51			II.*	17	51		II.*	
9	2	43		IV.	9	19			I.	20	24			II.	20	24		II.	
4	33	2.0		II.	2	56		19	I.	20	37	20.5		I.	20	37	20.5	I.	
9	26	42.7		I.	4	11			I.	20	46			II.	20	46		II.	
9	50			II.	5	16			I.	20	57			III.	20	57		III.	
12	55			I.	6	30			I.	23	16			II.	23	16		II.	
10	6	35		I.	20	26	7.2		II.	29	0	9		I.	29	0	9	I.	
7	46			I.	0	16	9.6		I.	17	47			I.*	17	47		I.*	
8	55			I.	1	49			II.	19	2			I.	19	2		I.	
10	5			I.	3	47			I.	20	7			I.	20	7		I.	
14	29	56.6		III.*	21	25			I.	21	21			I.	21	21		I.	
18	1	13.2		III.*	22	39			I.	21	21			II.	21	21		II.	
19	17			III.	23	45			I.	15	5	34.1		I.*	15	5	34.1	I.*	
22	54			III.	0	58			I.	17	45			II.*	17	45		II.*	
23	27			II.	8	20			III.	18	38			I.	18	38		I.	
11	1	54		II.															

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite, Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 15^h 30^m for an Inverting Telescope.*

Day.	West.				East.			
1		3'	2'	1'	○		4'	
2			3'		○	1'	2'	4'
3				1'	○	2'		4' 3' ●
4			2'		○	1'	3'	4'
5				1' 2'	○		3'	4'
6					○	1'	3' 2'	4'
7				3'	○		4'	
8	○ 1'		3'	2'	○	4'		
9			3'	4'	○	1' 2'		
10		4'		1' 3'	○	2'		
11		4'		2'	○	1'	3'	
12		4'		1' 2'	○		3'	
13		4'			○	1'	2'	
14	○ 2'	4'		1'	○			
15	○ 1'	4'	3'	2'	○			
16		3'	4'		○	1' 2'		
17				3 1'	○	4'	2'	
18			2'		○	1' 3'	4'	
19			1'		○		3'	4'
20					○	1'	2' 3'	4'
21	○ 3'			1'	○	2'		4'
22			3' 2'		○	1'		4'
23		3'			○	2'		4' 1' ●
24			3'	1'	○	2'	4'	
25			2'		○	4'	1' 3'	
26			4' 2 1'		○		3'	
27		4'			○	1' 2'	3'	
28		4'		1'	○	3'	2'	
29	4'		3' 2'		○	1'		
30	4'		3'	1'	○			2' ●

WASHINGTON MEAN TIME.

DECEMBER.

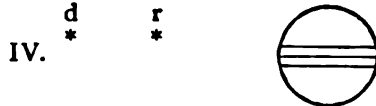
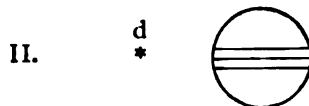
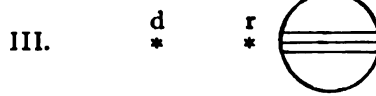
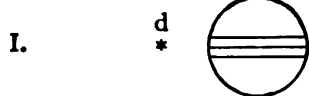
d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	12	15		I.*	11	22	38		IV.	21	20	8	20.7		II.				Dis.
	13	30		I.*	12	3	5		I.		20	44	17.1		I.				Dis.
	14	35		I.*		3	25		IV.	22	0	11			I.				Re.
	15	50		I.*		4	18		I.		1	21			II.				Re.
2	2	21	45.5	III.		5	25		I.		17	55			I.*				In.
	5	52	3.0	III.		6	37		I.		19	5			I.				In.
	7	7		II.		10	20		IV.		20	15			I.				Eg.
	7	23		III.		14	45		IV.*		21	24			I.				Eg.
	9	33	47.2	I.		20	13		III.	23	14	14	46.2		III.*				Dis.
	9	41		II.		22	57		II.		14	46			II.*				In.
	10	2		II.		23	52		III.		15	12	30.4		I.*				Dis.
	10	56		III.	13	0	23	8.5	I.		17	8			II.*				In.
	12	33		II.*		1	11		III.		17	40			II.*				Eg.
	13	6		I.*		1	27		II.		17	43	56.4		III.*				Re.
8	6	43		I.		1	51		II.		18	38			I.*				Re.
	7	58		I.		3	53		I.		18	52			III.				Dis.
	9	3		I.		4	19		II.		19	59			II.				Eg.
	10	17		I.		4	43		III.		22	22			III.				Re.
	15	3	38.1	IV.*		21	33		I.	24	12	24			I.*				In.
	19	40	49.3	IV.		22	46		I.		13	32			I.*				In.
4	1	37	48.8	II.		23	53		I.		14	44			I.*				Eg.
	3	1		IV.	14	1	5		I.		15	51			I.*				Eg.
	4	1	59.7	I.		17	32	19.0	II.*	25	9	25	49.2		II.				Dis.
	7	2		II.		18	51	22.3	I.		9	40	44.0		I.				Dis.
	7	30		IV.		22	21		I.		13	5			I.*				Re.
	7	34		I.		22	52		II.		14	35			II.*				Re.
5	1	12		I.		16	2		I.*	26	6	52			I.				In.
	2	26		I.		17	14		I.*		8	0			I.				In.
	3	32		I.		18	22		I.*		9	12			I.				Eg.
	4	45		I.		19	33		I.		10	19			I.				Eg.
	16	15		III.*	16	10	17	10.4	III.	27	4	3			II.				In.
	19	55		III.		12	13		II.*		4	8	59.0		III.				In.
	20	24		II.		13	19	35.4	I.*		6	21			I.				Dis.
	21	19		III.		13	46	44.0	III.*		6	57			II.				In.
	22	30	14.6	I.		14	41		II.*		7	32			II.				Eg.
	22	57		II.		15	7		III.*		7	47			I.				Re.
	23	19		II.		15	8		II.*		8	41			III.				Eg.
6	0	52		III.		16	48		I.*		9	12			III.				In.
	1	49		II.		17	33		II.*		12	11			II.				Eg.
	2	2		I.		18	38		III.*	28	1	21			III.*				Eg.
	19	40		I.		17	10	30	I.		2	27			I.				In.
	20	54		I.		11	42		I.*		3	41			I.				In.
	22	0		I.		12	50		I.*		4	46			I.				Eg.
	23	13		I.		14	1		I.*		16	35			I.				Eg.
7	14	56	20.0	II.*	18	6	49	45.8	II.	29	1	59			IV.*				In.
	16	58	28.3	I.*		7	47	48.1	I.		21	20			IV.				Eg.
	20	19		II.		11	16		I.*		22	37	14.0		I.				Dis.
	20	29		I.		12	6		II.*		22	44	26.2		II.				Dis.
8	14	8		I.*		19	4	58	I.	30	3	5			I.				Re.
	15	22		I.*		6	10		I.		3	49			IV.				In.
	16	28		I.*		7	18		I.		7	23			II.				Re.
	17	41		I.*		8	29		I.		19	49			IV.				Eg.
9	6	19	8.8	III.	20	0	10		III.	31	2	1			I.				In.
	9	40		II.		1	30		II.		20	55			I.				In.
	9	49	4.8	III.		2	16	2.7	I.		22	9			I.				Eg.
	11	17		III.		3	49		III.		23	14			I.				Eg.
	11	26	41.3	I.		3	55		II.	30	17	5	28.1		I.*				Dis.
	12	12		II.*		4	24		II.		17	19			II.*				In.
	12	34		II.*		4	58		III.		18	12	40.2		III.*				Dis.
	14	49		III.*		5	43		I.		19	33			II.				In.
	14	57		I.*		6	46		II.		20	13			II.				Eg.
	15	4		II.*		8	29		III.		20	27			I.				Re.
10	8	37		I.		9	2	12.0	IV.		21	41	26.2		III.				Re.
	9	50		I.		13	36	44.2	IV.*		22	24			II.				Eg.
	10	57		I.		20	19		IV.		22	32			III.				Dis.
	12	9		I.*		23	27		I.	31	2	1			III.				Re.
11	4	13	46.0	II.	21	0	37		I.		14	18			I.*				In.
	5	54	53.8	I.		0	40		IV.		15	22			I.*				In.
	9	25		I.		1	47		I.		16	38			I.*				Eg.
	9	35		II.		2	56		I.		17	41			I.*				Eg.

NOTE.—In., denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

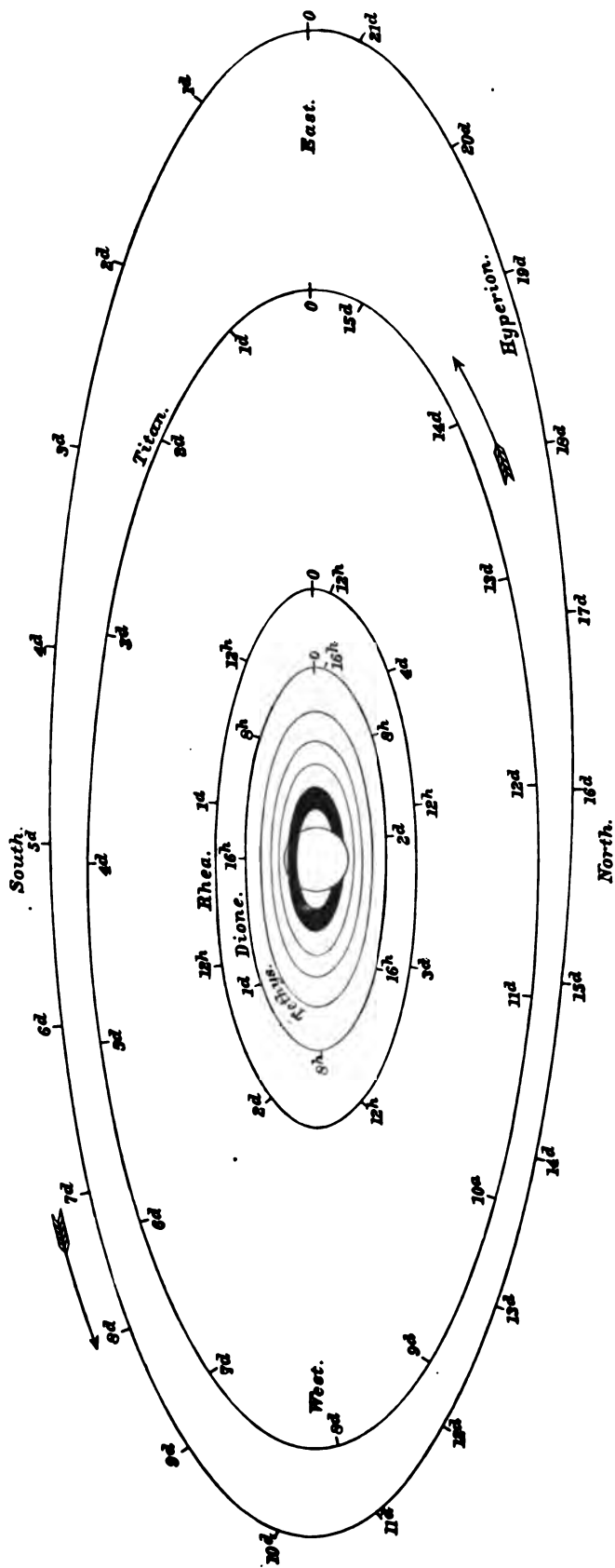
Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 15^h 0^m for an Inverting Telescope.*

Day.	West.				East.			
1	○ 1'	'4	'3		○	2'		
2		'4	2'		○	'1		
3			'2	'4	○		'3	
4				'1	○	'4	'1	'3
5				'1	○	3' 2'		'4
6			3'	3'	○	1'		'4
7		3'		'1	○			'4
8			'3		○	1'	'2	'4
9	○ 2'				○	'1		'4
10			'2	1'	○		'3	'4
11					○	'1	'4	3'
12	○ 4'			1'	○	3' 2'		
13			'4	2' 3'	○	1'		
14		'4	3'	'1	○			
15		'4		'3	○	1'	'2	
16	○ 2' 4'				○			'3 ● '1 ●
17		'4		'2	○		'3	
18		'4			○	'1		3'
19			'4	1'	○		2' 3'	
20				'2 3' '4	○	'1		
21			3'	'1	○		'4	
22			'3		○	1'	'2	'4
23				'1	○	2'		'4
24	○ 1'		2'		○		'3	'4
25					○	'2	'1	'3
26			1'		○		2' 3'	'4
27			2' 3'		○	'1		'4
28		3'	'2 '1		○	'4		
29		'3		'4	○	1'	'2	
30		'4	'3 '1		○	2'		
31		'4	2'		○	1'	'3	



NAMES OF THE

SATELLITES.

- I. Mimas.
- II. Enceladus.
- III. Tethys.
- IV. Dione.
- V. Rhea.
- VI. Titan.
- VII. Hyperion.
- VIII. Iapetus

MEAN SYNODIC

PERIODS.

	d	h
I.	0	22.6
II.	1	8.9
III.	1	21.3
IV.	2	17.7
V.	4	12.4
VI.	15	23.3
VII.	21	7.8
VIII.	79	22.0

APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN.

AT OPPOSITION IN 1896.

AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "o" are those of the eastern elongation, as seen in an inverting telescope. The apparent positions of a satellite at any time may be marked on the diagram by counting around the orbit the interval in days and hours which has elapsed since the last east elongation. The times of these elongations may be found from the following tables. Mimas can be seen only within a few hours of each elongation: the time of every elongation visible at Washington is therefore given. The times of other elongations of any satellite in the same direction may be found by adding or subtracting any multiple of the period. For the three outer satellites the times of elongation and conjunction are given. The following abbreviations are used:—

- E., East Elongation,
I., Inferior Conjunction (south of planet),
W., West Elongation,
S., Superior Conjunction (north of planet).

MIMAS.

Greatest Elongations Visible at Washington.

Jan. 9 18.3 W. 10 16.9 W. 11 15.5 W. 17 18.6 E. 18 17.2 E.	Feb. 28 17.2 W. 29 15.8 W. Mar. 1 14.4 W. 2 13.0 W. 7 17.4 E.	Apr. 1 16.7 W. 2 15.3 W. 3 13.9 W. 4 12.6 W. 5 11.2 W.	Apr. 27 14.6 E. 28 13.2 E. 29 11.8 E. 30 10.4 E. May 1 8.9 E.	May 22 13.8 W. 23 12.4 W. 24 11.0 W. 25 9.7 W. 26 8.3 W.	June 18 10.3 E. 19 9.0 E. 25 11.3 W. 26 9.9 W. 27 8.5 W.
19 15.8 E. 25 18.9 W. 26 17.5 W. 27 16.1 W. Feb. 3 17.8 E.	8 16.0 E. 9 14.6 E. 10 13.2 E. 11 11.9 E. 15 17.6 W.	6 9.8 W. 9 16.9 E. 10 15.5 E. 11 14.1 E. 12 12.7 E.	4 16.1 W. 5 14.7 W. 6 13.3 W. 7 12.0 W. 8 10.6 W.	29 15.5 E. 30 14.1 E. 31 12.7 E. June 1 11.3 E. 2 9.9 E.	July 3 11.6 E. 4 10.2 E. 5 8.8 E. 11 11.8 W. 12 10.5 W.
4 16.4 E. 5 15.0 E. 11 18.1 W. 12 16.7 W. 13 15.3 W.	16 16.3 W. 17 14.9 W. 18 13.5 W. 19 12.1 W. 24 16.4 E.	13 11.3 E. 14 10.0 E. 18 15.7 W. 19 14.4 W. 20 13.0 W.	9 9.2 W. 10 7.8 W. 13 15.0 E. 14 13.6 E. 15 12.2 E.	3 8.6 E. 6 15.7 W. 7 14.3 W. 8 12.9 W. 9 11.5 W.	13 9.1 W. 14 7.7 W. 20 11.4 E. 21 10.0 E. 22 8.6 E.
14 13.9 W. 20 16.9 E. 21 15.6 E. 22 14.2 E. 23 12.8 E.	25 15.0 E. 26 13.7 E. 27 12.3 E. 28 10.9 E.	21 11.6 W. 22 10.2 W. 23 8.8 W. 26 16.0 E.	16 10.8 E. 17 9.5 E. 18 8.1 E. 21 15.2 W.	10 10.1 W. 11 8.7 W. 16 13.1 E. 17 11.7 E.	29 10.3 W. 30 8.9 W. Aug. 6 10.5 E. 7 9.1 E.

ENCELADUS.

Jan. 6 3.6 E. 7 12.5 E. 8 21.4 E. 10 6.3 E. 11 15.2 E.	Jan. 19 20.6 E. 21 5.5 E. 22 14.4 E. 23 23.3 E. 25 8.2 E.	Feb. 2 13.5 E. 3 22.4 E. 5 7.3 E. 6 16.2 E. 8 1.0 E.	Feb. 16 6.4 E. 17 15.2 E. 19 0.1 E. 20 9.0 E. 21 17.9 E.	Feb. 29 23.2 E. Mar. 2 8.1 E. 3 16.9 E. 5 1.8 E. 6 10.7 E.	Mar. 14 16.1 E. 16 1.0 E. 17 9.8 E. 18 18.7 E. 20 3.6 E.
13 0.1 E. 14 9.0 E. 15 17.9 E. 17 2.7 E. 18 11.6 E.	26 17.0 E. 28 1.9 E. 29 10.8 E. 30 19.7 E. Feb. 1 4.6 E.	9 9.9 E. 10 18.8 E. 12 3.7 E. 13 12.6 E. 14 21.5 E.	23 2.8 E. 24 11.7 E. 25 20.6 E. 27 5.5 E. 28 14.4 E.	7 19.6 E. 9 4.5 E. 10 13.4 E. 11 22.3 E. 13 7.2 E.	21 12.4 E. 22 21.3 E. 24 6.2 E. 25 15.1 E. 26 23.9 E.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ENCELADUS—(Concluded.)

Mar. 28 8.8 E. 29 17.7 E. 31 2.5 E. Apr. 1 11.4 E. 2 20.3 E. 4 5.2 E. 5 14.0 E. 6 22.9 E. 8 7.7 E. 9 16.6 E. 11 1.5 E. 12 10.4 E. 13 19.3 E. 15 4.2 E. 16 13.1 E.	Apr. 17 22.0 E. 19 6.8 E. 20 15.7 E. 22 0.6 E. 23 9.5 E. 24 18.4 E. 26 3.3 E. 27 12.1 E. 28 21.0 E. 30 5.9 E. May 1 14.7 E. 2 23.6 E. 4 8.4 E. 5 17.3 E. 7 2.2 E.	May 8 11.1 E. 9 20.0 E. 11 4.9 E. 12 13.7 E. 13 22.6 E. 15 7.4 E. 16 16.3 E. 18 1.2 E. 19 10.1 E. 20 18.9 E. 22 3.8 E. 23 12.6 E. 24 21.5 E. 26 6.4 E. 27 15.3 E.	May 29 0.1 E. 30 9.0 E. 31 17.9 E. June 2 2.8 E. 3 11.7 E. 4 20.6 E. 6 5.5 E. 7 14.4 E. 8 23.3 E. 10 8.2 E. 11 17.0 E. 13 1.9 E. 14 10.8 E. 15 19.7 E. 17 4.5 E.	June 18 13.4 E. 19 22.3 E. 21 7.2 E. 22 16.0 E. 24 0.9 E. 25 9.8 E. 26 18.6 E. 28 3.5 E. 29 12.4 E. 30 21.3 E. July 2 6.2 E. 3 15.1 E. 4 23.9 E. 6 8.8 E. 7 17.7 E.	July 9 2.6 E. 10 11.5 E. 11 20.4 E. 13 5.3 E. 14 14.2 E. 15 23.1 E. 17 7.9 E. 18 16.8 E. 20 1.7 E. 21 10.6 E. 22 19.5 E. 24 4.4 E. 25 13.3 E. 26 22.2 E. 28 7.1 E.
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TETHYS.

Jan. 6 23.8 E. 8 21.1 E. 10 18.4 E. 12 15.7 E. 14 13.0 E. 16 10.3 E. 18 7.6 E. 20 4.9 E. 22 2.3 E. 23 23.6 E. 25 20.9 E. 27 18.2 E. 29 15.5 E. 31 12.8 E. Feb. 2 10.2 E. 4 7.5 E. 6 4.8 E. 8 2.1 E. 9 23.4 E.	Feb. 11 20.7 E. 13 18.0 E. 15 15.4 E. 17 12.7 E. 19 10.0 E. 21 7.4 E. 23 4.7 E. 25 2.0 E. 26 23.3 E. 28 20.7 E. Mar. 1 18.0 E. 3 15.3 E. 5 12.5 E. 7 9.8 E. 9 7.1 E. 11 4.4 E. 13 1.7 E. 14 23.0 E. 16 20.4 E.	Mar. 18 17.7 E. 20 15.0 E. 22 12.3 E. 24 9.6 E. 26 6.9 E. 28 4.1 E. 30 1.4 E. 31 22.7 E. Apr. 2 20.0 E. 4 17.3 E. 6 14.6 E. 8 11.9 E. 10 9.1 E. 12 6.4 E. 14 3.7 E. 16 1.0 E. 17 22.2 E. 19 19.5 E. 21 16.8 E.	Apr. 23 14.1 E. 25 11.4 E. 27 8.7 E. 29 6.0 E. May 1 3.3 E. 3 0.6 E. 4 21.9 E. 6 19.2 E. 8 16.5 E. 10 13.8 E. 12 11.1 E. 14 8.4 E. 16 5.7 E. 18 3.0 E. 20 0.3 E. 21 21.6 E. 23 18.9 E. 25 16.2 E. 27 13.5 E.	May 29 10.8 E. 31 8.1 E. June 2 5.4 E. 4 2.7 E. 6 0.0 E. 7 21.2 E. 9 18.5 E. 11 15.7 E. 13 13.0 E. 15 10.3 E. 17 7.7 E. 19 5.0 E. 21 2.3 E. 22 23.6 E. 24 20.9 E. 26 18.2 E. 28 15.5 E. 30 12.8 E. July 2 10.1 E.	July 4 7.4 E. 6 4.7 E. 8 2.0 E. 9 23.3 E. 11 20.7 E. 13 18.0 E. 15 15.3 E. 17 12.6 E. 19 9.8 E. 21 7.1 E. 23 4.4 E. 25 1.7 E. 26 23.0 E. 28 20.3 E. 30 17.6 E. Aug. 1 14.9 E. 3 12.2 E. 5 9.5 E. 7 6.8 E.
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DIONE.

Jan. 8 11.3 E. 11 5.0 E. 13 22.7 E. 16 16.4 E. 19 10.1 E. 22 3.8 E. 24 21.5 E. 27 15.2 E. 30 8.9 E. Feb. 2 2.7 E. 4 20.4 E. 7 14.1 E.	Feb. 10 7.8 E. 13 1.5 E. 15 19.2 E. 18 12.9 E. 21 6.6 E. 24 0.3 E. 26 18.0 E. 29 11.7 E. Mar. 3 5.4 E. 5 23.0 E. 8 16.7 E. 11 10.4 E.	Mar. 14 4.1 E. 16 21.8 E. 19 15.5 E. 22 9.1 E. 25 2.8 E. 27 20.4 E. 30 14.1 E. Apr. 2 7.8 E. 5 1.4 E. 7 19.1 E. 10 12.7 E. 13 6.3 E.	Apr. 15 23.9 E. 18 17.5 E. 21 11.1 E. 24 4.7 E. 26 22.4 E. 29 16.1 E. May 2 9.7 E. 5 3.4 E. 7 21.0 E. 10 14.7 E. 13 8.4 E. 16 2.0 E.	May 18 19.7 E. 21 13.4 E. 24 7.0 E. 27 0.7 E. 29 18.3 E. June 1 12.0 E. 4 5.6 E. 6 23.2 E. 9 16.9 E. 12 10.5 E. 15 4.2 E. 17 21.9 E.	June 20 15.6 E. 23 9.2 E. 26 2.9 E. 28 20.6 E. July 1 14.3 E. 4 8.0 E. 7 1.7 E. 9 19.4 E. 12 13.1 E. 15 6.8 E. 18 0.5 E. 20 18.1 E.
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RHEA.		TITAN.		HYPERION.	
d h	d h	d h	d h	d h	d h
Jan. 8 21.0 E.	Apr. 17 6.2 E.	Jan. 11 15.4 E.	Apr. 8 11.7 W.	Jan. 1 0.8 E.	Apr. 26 22.1 W.
13 9.5 E.	21 18.5 E.	15 13.5 I.	12 12.3 S.	7 4.1 I.	May 1 10.8 S.
17 22.0 E.	26 6.9 E.	19 17.6 W.	16 7.5 E.	11 23.2 W.	7 4.5 E.
22 10.6 E.	30 19.2 E.	23 19.2 S.	20 5.0 I.	16 11.4 S.	13 8.2 I.
26 23.1 E.	May 5 7.5 E.	27 15.2 E.	24 8.9 W.	22 5.4 E.	18 2.9 W.
31 11.6 E.	9 19.8 E.	31 13.0 I.	28 9.7 S.	28 8.8 I.	22 15.9 S.
Feb. 5 0.1 E.	14 8.1 E.	Feb. 4 17.1 W.	May 2 4.9 E.	Feb. 2 3.8 W.	28 9.5 E.
9 12.6 E.	18 20.4 E.	8 18.7 S.	6 2.3 I.	6 16.2 S.	June 3 13.6 I.
14 1.0 E.	23 8.7 E.	12 14.6 E.	10 6.3 W.	12 10.0 E.	8 8.4 W.
18 13.4 E.	27 21.0 E.	16 12.5 I.	14 7.2 S.	18 13.5 I.	12 21.1 S.
23 1.8 E.	June 1 9.4 E.	20 16.6 W.	18 2.3 E.	23 8.5 W.	18 14.9 E.
27 14.2 E.	5 21.7 E.	24 18.2 S.	21 23.4 I.	27 21.0 S.	24 18.8 I.
Mar. 3 2.6 E.	10 10.1 E.	28 13.5 E.	26 3.6 W.	Mar. 4 14.5 E.	29 13.8 W.
7 15.0 E.	14 22.4 E.	Mar. 3 10.7 I.	30 4.6 S.	10 18.3 I.	July 4 2.6 S.
12 3.4 E.	19 10.8 E.	7 14.6 W.	June 2 23.6 E.	15 13.2 W.	9 20.5 E.
16 15.7 E.	23 23.1 E.	11 16.5 S.	6 20.4 I.	20 1.8 S.	16 0.4 I.
21 4.0 E.	28 11.5 E.	15 12.1 E.	11 0.7 W.	25 19.3 E.	20 19.5 W.
25 16.4 E.	July 2 23.9 E.	19 9.6 I.	15 1.4 S.	31 23.0 I.	25 8.0 S.
30 4.8 E.	7 12.2 E.	23 13.6 W.	18 20.4 E.	Apr. 5 17.8 W.	31 2.0 E.
Apr. 3 17.1 E.	12 0.6 E.	27 14.4 S.	22 17.3 I.	10 6.4 S.	Aug. 6 5.6 I.
8 5.5 E.	16 13.0 E.	31 10.3 E.	26 21.4 W.	15 23.7 E.	11 0.7 W.
12 17.9 E.	21 1.4 E.	Apr. 4 7.7 I.	30 22.5 S.	22 3.2 I.	15 13.1 S.

IAPETUS.

d h	d h	d h	d h	d h	d h
Jan. 8 3.0 E.	Feb. 15 7.3 W.	Mar. 26 12.2 E.	May 3 16.9 W.	June 12 23.6 E.	July 21 4.4 W.
26 1.2 I.	Mar. 6 10.7 S.	Apr. 13 10.8 I.	23 20.7 S.	30 22.4 I.	Aug. 10 8.4 S.

THE APPARENT ELEMENTS OF SATURN'S RINGS.

Greenwich Mean Noon.	a Outer Major Axis.	b Outer Minor Axis.	p Inclination of Northern Semi-Minor Axis to Circle of Declination from North to East.	l The Elevation of the Earth above the Plane of the Ring.	l' The Elevation of the Sun above the Plane of the Ring.	Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on the—	
						Equator.	Ecliptic.
Jan. 1	36.04	13.24	+1 0.9	+21 33.6	+20 8.5	278 7.0	235 44.0
21	37.09	13.83	+1 12.5	+21 53.2	+20 19.6	279 39.3	237 16.4
Feb. 10	38.34	14.39	+1 19.6	+22 2.7	+20 31.1	280 35.9	238 13.1
Mar. 1	39.65	14.87	+1 21.4	+22 1.8	+20 42.3	280 50.8	238 28.0
21	40.86	15.21	+1 18.0	+21 51.3	+20 53.4	280 23.4	238 0.7
Apr. 10	41.76	15.34	+1 10.0	+21 33.0	+21 4.4	279 19.5	236 57.0
30	42.19	15.24	+0 59.1	+21 10.0	+21 15.3	277 52.9	235 30.4
May 20	42.06	14.92	+0 47.6	+20 46.8	+21 25.9	276 20.8	233 58.4
June 9	41.41	14.48	+0 37.7	+20 28.2	+21 36.4	275 1.8	232 39.5
29	40.35	14.01	+0 31.3	+20 18.5	+21 46.7	274 10.9	231 48.6
July 19	39.09	13.58	+0 29.5	+20 19.8	+21 56.9	273 56.6	231 34.5
Aug. 8	37.79	13.26	+0 32.7	+20 32.6	+22 7.0	274 21.9	231 59.8
28	36.60	13.07	+0 40.6	+20 55.4	+22 16.8	275 24.8	233 2.8
Sept. 17	35.61	13.01	+0 52.7	+21 25.6	+22 26.4	277 0.4	234 38.5
Oct. 7	34.89	13.07	+1 8.0	+22 0.3	+22 36.1	279 2.3	236 40.5
27	34.46	13.24	+1 25.6	+22 36.2	+22 45.4	281 22.4	239 0.7
Nov. 16	34.34	13.52	+1 44.5	+23 10.6	+22 54.6	283 52.3	241 30.6
Dec. 6	34.55	13.88	+2 3.2	+23 41.1	+23 3.7	286 22.2	244 0.6
26	35.08	14.32	+2 20.5	+24 5.8	+23 12.7	288 42.2	246 20.7
31	35.26	14.45	+2 24.5	+24 11.0	+23 14.9	289 14.5	246 53.0

The factor to be multiplied by *a* and *b* to obtain the axes of—

The inner ellipse of the outer ring = 0.8801,

The outer ellipse of the inner ring = 0.8599,

The inner ellipse of the inner ring = 0.6650,

The inner ellipse of the dusky ring = 0.5486,

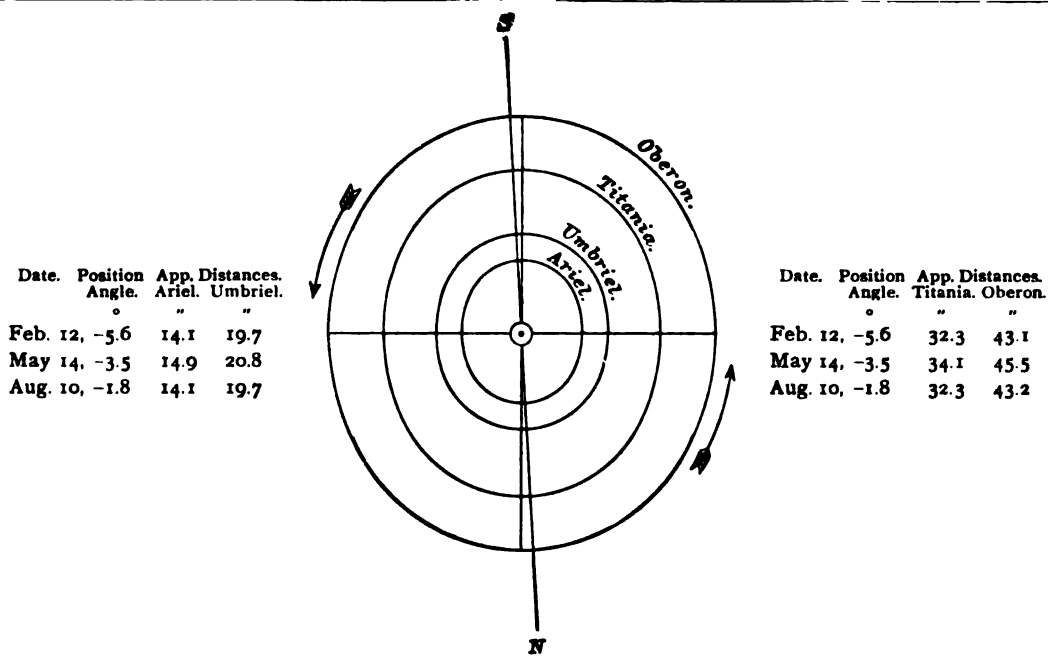
log factor = 9.9445

log factor = 9.9344

log factor = 9.8228

log factor = 9.7392

NOTE.—The positive sign of *l* indicates that the visible surface of the ring is the northern one.



APPARENT ORBITS OF THE SATELLITES OF URANUS IN 1896,
AS SEEN IN AN INVERTING TELESCOPE.

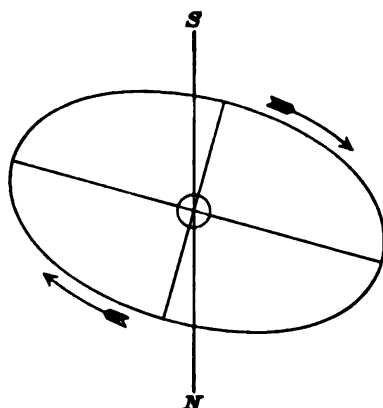
WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ARIEL.		UMBRIEL.		TITANIA.		OBERON.
North.	South.	North.	South.	North.	South.	North and South.
d h	d h	d h	d h	d h	d h	d h
Feb. 4 16.2	Feb. 8 10.9	Feb. 4 16.0	Feb. 6 17.7	Feb. 9 18.9	Feb. 5 10.4	Feb. 11 22.1 S.
12 5.6	16 0.4	12 23.0	15 0.7	18 11.9	14 3.4	18 15.8 N.
19 19.1	23 13.9	21 5.9	23 7.6	27 5.0	22 20.5	25 9.4 S.
27 8.6	Mar. 2 3.3	29 12.8	Mar. 2 14.6	Mar. 6 22.0	Mar. 2 13.5	Mar. 3 3.1 N.
Mar. 5 22.1	9 16.8	Mar. 8 19.8	10 21.5	15 15.0	11 6.5	9 20.7 S.
13 11.6	17 6.3	17 2.7	19 4.5	24 8.0	19 23.5	16 14.4 N.
21 1.0	24 19.8	25 9.7	27 11.4	Apr. 2 1.0	28 16.5	23 8.0 S.
28 14.5	Apr. 1 9.3	2 16.6	Apr. 4 18.4	10 18.1	Apr. 6 9.6	30 1.7 N.
Apr. 5 4.0	8 22.7	10 23.6	13 1.3	19 11.1	15 2.6	Apr. 5 19.3 S.
12 17.5	16 12.2	19 6.5	21 8.3	28 4.1	23 19.6	12 13.0 N.
20 7.0	24 1.7	27 13.5	29 15.2	May 6 21.1	May 2 12.6	19 6.6 S.
27 20.5	May 1 15.2	May 5 20.4	May 7 22.2	15 14.1	11 5.6	26 0.3 N.
May 5 9.9	9 4.7	14 3.4	16 5.1	24 7.2	19 22.7	May 2 17.9 S.
12 23.4	16 18.2	22 10.3	24 12.1	June 2 0.2	28 15.7	9 11.6 N.
20 12.9	24 7.6	30 17.3	June 1 19.0	10 17.2	June 6 8.7	16 5.2 S.
28 2.4	31 21.1	June 8 0.2	10 2.0	19 10.3	15 1.7	22 22.9 N.
June 4 15.9	June 8 10.6	16 7.2	18 8.9	28 3.3	23 18.7	29 16.6 S.
12 5.4	16 0.1	24 14.1	26 15.9	July 6 20.3	July 2 11.8	June 5 10.2 N.
19 18.9	23 13.6	July 2 21.1	July 4 22.8	15 13.4	11 4.8	12 3.9 S.
27 8.4	July 1 3.1	11 4.0	13 5.8	24 6.4	19 21.8	18 21.6 N.
July 4 21.9	8 16.6	19 11.0	21 12.7	Aug. 1 23.4	28 14.9	25 15.2 S.
12 11.4	16 6.1	27 17.9	29 19.7	10 16.4	Aug. 6 7.9	July 2 8.9 N.
20 0.9	23 19.6	Aug. 5 0.9	Aug. 7 2.6	19 9.5	15 0.9	9 2.5 S.
27 14.4	31 9.1	13 7.9	15 9.6	28 2.5	23 18.0	15 20.2 N.
Aug. 4 3.9	Aug. 7 22.6	21 14.8	23 16.6	Sept. 5 19.5	Sept. 1 11.0	22 13.8 S.

Period of Ariel, d h
2 12.489
Period of Umbriel, 4 3.460

Period of Titania, d h
8 16.942
Period of Oberon, 13 11.119

NOTE.- For Ariel only every third elongation is given, and for Umbriel every alternate one. The intermediate ones may be found by adding multiples of the period of the satellite.



Date.	Position Angle.	Apparent Distance.
	°	"
Mar. 11,	250.4	16.3
Sept. 15,	255.7	16.4
Dec. 12,	254.3	16.9

APPARENT ORBIT OF THE SATELLITE OF NEPTUNE IN 1896,
AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

East.		West.		East.		West.		East.		West.	
d	h	d	h	d	h	d	h	d	h	d	h
Jan. 3	11.6	Jan 6	10.1	Mar. 14	0.8	Mar. 16	23.3	Oct. 29	3.5	Nov. 1	2.0
9	8.7	12	7.1	19	21.9	22	20.4	Nov. 4	0.6	6	23.1
15	5.8	18	4.2	Aug. 31	8.6	3	7.2	9	21.7	12	20.2
21	2.9	24	1.3	Sept. 6	5.7	9	4.3	15	18.7	18	17.3
27	0.0	29	22.4	12	2.8	15	1.4	21	15.8	24	14.4
Feb. 1	21.1	Feb. 4	19.5	17	23.9	20	22.4	27	12.9	30	11.5
7	18.2	10	16.6	23	21.0	26	19.5	Dec. 3	10.0	6	8.5
13	15.3	16	13.8	29	18.1	2	16.6	9	7.1	12	5.6
19	12.4	22	10.9	Oct. 5	15.2	8	13.7	15	4.2	18	2.7
25	9.5	28	8.0	11	12.2	14	10.8	21	1.3	23	23.8
Mar. 2	6.6	Mar. 5	5.1	17	9.3	20	7.9	26	22.3	29	20.9
8	3.7	11	2.2	23	6.4	26	4.9	Jan. 1	19.4	4	18.0

The above times are those of each passage of the satellite through the apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, remembering that the radius vector of the satellite describes equal areas in equal times.

Period of the satellite of Neptune, 5^d 21^h.045.

NOTE.—In the preceding diagrams the central circle represents the planet and is on the same scale as the orbits.

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

Jan.				Apr.			
1	1	-	⊕ in Perihelion.	1	16	-	♂ Greatest Hel. Lat. S.
1	20	-	♀ Greatest Hel. Lat. N.	7	17	11	♂♂ ♀ ♂ - 0 53
1	23	56	♂ ♀ ♀ - 1 53	10	10	49	♂♀ ♀ ♀ - 4 12
4	15	-	♂ Greatest Hel. Lat. S.	12	2	55	♂♂ ♀ ♀ - 5 30
9	6	31	♂ ♀ ♀ + 7 31	16	19	14	♂♂ ♀ ♀ - 6 21
9	16	18	♂♂ ♀ ♀ + 5 34	17	12	-	♂♂ ♂ Superior.
10	18	6	♂♀ ♀ ♀ + 7 36	19	0	-	♂♀ ♂ ♀ - 2 2
11	18	5	♂♂ ♀ ♂ + 4 35	20	2	52	♂♀ ♀ in ♄
15	14	28	♂♀ ♀ ♀ + 0 32	20	16	-	♀ Greatest Hel. Lat. S.
23	12	-	♂ Greatest elong. E. 18 31	23	18	-	♀ in Perihelion.
23	17	-	♀ in ♄	25	6	-	♂♂ ♀ ♀ + 7 48
23	20	-	♂♀ ♂ ♂ + 5 29	27	14	0	♂♂ ♀ ♀ + 0 10
25	20	8	♂♂ ♀ ♀ - 6 36	27	23	30	♂♀ ♂ ♀ - 2 24
28	7	-	♀ in Perihelion.	14	2	27	♂♂ ♀ ♀ + 3 45
29	4	11	♂♀ ♀ ♀ - 2 4	14	23	-	♂♂ ♀ Greatest elong. E. 22 9
29	14	-	♀ Stationary.	15	21	-	♂♀ ♀ ♀ - 1 34
Feb. 5	15	39	♂ ♀ ♀ + 7 46	17	14	10	♂♂ ♀ Greatest Hel. Lat. S.
5	23	10	♂♂ ♀ ♂ + 5 40	18	17	-	♂♂ ♀ ♀ + 7 46
7	7	-	♂♀ ♂ ♀ + 1 38	24	20	54	♂♂ ♀ ♂ + 5 28
7	15	-	♂♀ ♀ ♀ + 3 27	25	7	52	♂♂ ♀ Stationary.
8	1	-	♂♀ ♀ ♀ + 5 3	28	20	-	♀ in ♄
9	3	-	♂♀ ♀ ♀ + 5 41	29	1	-	♂♂ ♀ ♂ - 5 48
9	14	16	♂♀ ♂ ♀ + 1 38	7	10	-	♂♀ ♂ in Aphelion.
9	14	44	♂♀ ♀ ♀ + 5 3	8	6	-	♂♀ ♂ Inferior.
12	0	57	♂♀ ♀ ♀ + 5 41	9	20	-	♂♀ ♀ ♀ - 5 14
12	21	-	♂♀ ♂ ♀ + 5 41	10	1	2	♂♀ ♀ ♀ - 6 5
13	-	-	♂♀ ♂ ♀ + 5 41	10	11	2	♂♀ ♀ ♀ - 8 3
20	1	-	♂♀ ♂ ♀ + 5 41	11	23	-	♂♀ ♀ in Perihelion.
22	4	55	♂♀ ♀ ♀ - 6 39	14	4	4	♂♀ ♀ ♀ - 0 59
24	4	-	♂♀ ♀ ♀ - 6 39	14	7	-	♂♀ ♀ ♀ - 2 42
25	10	3	♂♀ ♀ ♀ - 2 18	14	14	5	♂♀ ♀ ♀ - 3 57
26	19	-	♂♀ ♀ ♀ - 2 18	14	17	-	♂♀ ♀ ♀ + 1 12
26	22	-	♂♀ ♀ ♀ - 2 18	19	1	-	♀ in ♄
27	4	-	♂♀ ♀ ♀ - 2 18	20	5	-	♀ enters ♄, Summer com.
28	-	-	♂♀ ♀ ♀ - 2 18	21	2	30	♂♀ ♀ ♀ + 7 49
Mar. 2	1	-	♂♀ ♀ ♀ - 2 18	21	14	36	♂♂ ♀ ♂ + 5 34
3	22	10.5	♂♀ ♀ ♀ + 7 54	21	17	-	♀ Stationary.
4	6	11	♂♂ ♀ ♂ + 5 42	28	15	-	♀ Greatest Hel. Lat. S.
4	15	-	♂♀ ♂ ♀ - 0 42	29	14	-	♂♀ ♀ ♀ - 2 20
5	3	-	♂♀ ♀ ♀ - 0 42	July 3	5	-	♂♀ ♀ in Aphelion.
9	13	48	♂♀ ♀ ♀ - 0 42	3	11	-	♀ Greatest elong. W. 21 25
10	21	11	♂♀ ♀ ♀ - 0 42	4	6	50	♂♀ ♀ ♂ - 6 56
11	7	29	♂♀ ♀ ♀ - 0 42	7	21	0	♂♀ ♀ ♀ - 6 6
12	6	-	♀ in Aphelion.				
13	20	-	♂♀ ♀ Capricorni . . ♀ - 0 6				
19	9	-	♂♀ ♀ ♀ - 0 6				
20	12	28	♂♀ ♀ ♀ - 0 6				
23	17	37	♂♀ ♀ ♀ - 0 6				
24	7	-	♂♀ ♀ ♀ - 0 6				
31	6	6	♂♀ ♀ ♀ - 0 6				
31	14	29	♂♀ ♀ ♀ - 0 6				
Apr. 1	8	-	♀ in Aphelion.				

PLANETARY CONSTELLATIONS.

d h m				d h m									
July	8	11	17	♂ ♀ ☽	♀ - 6	22	Oct.	3	9	4	♂ ♀ ☽	♂ + 1	40
	8	20	-	♂ ♀ ☽ Superior.				6	12	24	♂ ♀ ☽	♂ + 2	3
	10	2	28	♂ ♀ ☽	♀ - 2	17		8	0	55	♂ ♀ ☽	♀ + 5	18
	11	20	48	♂ ♀ ☽	♂ - 0	22		8	4	-	♂ ♀ ☽ Inferior.		
	13	5	-	♂ ♀ ☽ Geminorum.	♀ - 0	7		8	13	17	♂ ♀ ☽	♂ + 7	25
	15	23	-	♂ Stationary.				8	15	-	♀ in ☽		
	17	15	-	♂ in ☽				8	20	5	♂ ☽	♂ + 5	32
	18	7	43	♂ ♀ ☽	♂ + 7	50		13	2	-	♂ in ☽		
	18	19	59	♂ ☽	♂ + 5	42		13	14	-	♂ in ☽		
	22	5	-	♂ in Perihelion.				15	3	-	♂ ♀ ☽	♀ - 2	25
	22	16	-	♀ in Perihelion.				16	12	-	♂ Stationary.		
	28	11	-	♂ Stationary.				18	5	-	♂ in Perihelion.		
	28	16	-	♂ ♀ ☽ Canceri	♂ + 0	0		18	14	-	♂ ♀ ☽	♀ - 0	43
	31	1	-	♂ ♀ ☽ Superior.				23	19	-	♂ Greatest elong. W. 18	26	
Aug.	1	14	-	♂ ♀ ☽ Greatest Hel. Lat. N.				25	6	23	♂ ☽	♂ - 5	51
	2	4	31	♂ ♀ ☽	♂ - 7	0		25	23	20	♂ ♀ ☽	♂ - 3	29
	2	6	-	♂ ♀ ☽	♀ + 0	41		28	12	-	♂ Greatest Hel. Lat. N.		
	4	0	-	♂ ☽				31	3	0	♂ ☽	♂ + 2	25
	4	7	31	♂ ☽	♂ - 6	10	Nov.	1	13	-	♂ Stationary.		
	4	13	-	♂ ♀ ☽	♂ + 1	6		3	18	37	♂ ♀ ☽	♂ + 6	59
	7	21	-	♂ ♀ ☽	♂ + 0	18		5	4	59	♂ ☽	♂ + 7	14
	8	-	-	♂ ☽ eclipsed, invis. at Wash.				5	9	19	♂ ☽	♂ + 5	23
	8	16	0	♂ ♀ ☽	♂ + 0	16		6	20	28	♂ ♀ ☽	♀ + 3	10
	9	4	28	♂ ♀ ☽	♂ + 1	45		11	23	-	♀ in Aphelion.		
	9	6	9	♂ ♀ ☽	♂ + 2	3		12	21	-	♂ ☽		
	11	15	-	♂ ☽				15	22	-	♂ ☽		
	12	3	-	♂ ☽				19	3	-	♂ ♀ ☽	♂ - 1	50
	13	13	-	♀ Greatest Hel. Lat. N.				20	12	-	♂ ♀ ☽	♂ - 0	13
	14	14	21	♂ ☽	♂ + 7	47		20	23	-	♂ in ☽		
	15	1	35	♂ ☽	♂ + 5	45		21	10	58	♂ ☽	♂ - 5	44
	22	-	-	♂ partly eclips., vis. at Wash.				21	23	48	♂ ♀ ☽	♂ - 2	10
	25	0	-	♂ in ☽				27	16	18	♂ ☽	♂ + 3	8
	30	20	28	♂ ♀ ☽	♂ - 6	15		28	1	-	♂ ☽ Superior.		
	31	13	-	♂ ☽				30	5	-	♂ ☽		
	31	17	12	♂ ☽	♂ - 6	9	Dec.	1	4	-	♀ in Aphelion.		
Sept.	4	5	-	♂ in Aphelion.				2	20	56	♂ ☽	♂ + 7	11
	5	12	39	♂ ☽	♂ + 0	55		2	22	55	♂ ☽	♂ + 5	21
	8	4	38	♂ ♀ ☽	♀ + 4	59		4	7	16	♂ ♀ ☽	♂ + 3	2
	8	18	55	♂ ♀ ☽	♂ + 2	5		4	11	-	♀ Greatest Hel. Lat. S.		
	11	0	3	♂ ☽	♂ + 7	38		6	20	35	♂ ♀ ☽	♀ - 0	3
	11	9	16	♂ ☽	♂ + 5	41		9	16	-	♂ ☽		
	11	21	-	♂ ☽				10	12	-	♂ ☽		
	12	17	-	♀ Greatest elong. E. 26	43			18	12	5	♂ ☽	♂ - 1	34
	18	23	-	♂ ☽ Leonis	♂ + 0	20		18	16	20	♂ ☽	♂ - 5	45
	21	20	-	♂ enters ♉, Autumn com.				20	14	-	♂ enters ♊, Winter com.		
	22	3	-	♂ Stationary.				21	12	-	♀ Greatest Hel. Lat. S.		
	23	13	-	♂ ♀ ☽	♂ + 0	51		25	0	10	♂ ☽	♂ + 3	38
	24	2	-	♂ ♀ ☽	♂ - 4	38		25	8	-	♂ Stationary.		
	24	14	-	♀ Greatest Hel. Lat. S.				27	20	-	♂ ☽	♂ + 1	49
	25	17	-	♂ Stationary.				30	10	28	♂ ☽	♂ + 5	25
	28	0	53	♂ ☽	♂ - 6	2		30	10	40	♂ ☽	♂ + 7	15
	28	4	19	♂ ♀ ☽	♂ - 5	0		30	19	-	♂ in Perihelion.		

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
Åbo	+ 60 26 56.8	- 10 2.1	9.998887	^{h m s} - 6 37 18.45	^{h m s} - 1 29 6.41
Adelaide	- 34 55 33.8	+ 10 56.8	9.999520	- 14 22 32.34	- 9 14 20.30
Albany	+ 42 39 49.5	- 11 38.0	9.999326	- 0 13 12.87	+ 4 54 59.17
Alfred	+ 42 15 19.8	- 11 37.0	9.999337	+ 0 2 55.00	+ 5 11 7.04
Algier (<i>Old Obs.</i>)	+ 36 44 0	- 11 10.8	9.999476	- 5 20 28.8	- 0 12 16.8
Algier (<i>New Obs.</i>)	+ 36 47 50	- 11 11.3	9.999474	- 5 20 20.59	- 0 12 8.55
Allegheny	+ 40 27 41.6	- 11 31.3	9.999383	+ 0 11 50.89	+ 5 20 2.93
Altona	+ 53 32 45.3	- 11 10.2	9.999049	- 5 47 58.39	- 0 39 46.35
Amherst	+ 42 22 17.1	- 11 37.3	9.999334	- 0 18 7.37	+ 4 50 4.67
Annapolis	+ 38 58 53.5	- 11 24.5	9.999420	- 0 2 15.55	+ 5 5 56.49
Ann Arbor	+ 42 16 48.0	- 11 37.0	9.999336	+ 0 26 43.15	+ 5 34 55.19
Arequipa (<i>Harvard</i>)	- 16 24	+ 6 18.4	9.999884	- 0 22 42	+ 4 45 30
Armagh	+ 54 21 12.7	- 11 4.2	9.999029	- 4 41 36.6	+ 0 26 35.4
Athens	+ 37 58 20.0	- 11 18.9	9.999445	- 6 43 7.7	- 1 34 55.7
Beloit	+ 42 30 9.0	- 11 37.6	9.999331	+ 0 47 55.26	+ 5 56 7.30
Bergen	+ 60 23 54	- 10 2.7	9.998888	- 5 29 24.8	- 0 21 12.8
Berkeley	+ 37 52 21.7	- 11 18.3	9.999448	+ 3 0 50.33	+ 8 9 2.37
Berlin (<i>Urania</i>)	+ 52 31 31.8	- 11 17.0	9.999075	- 6 1 39.60	- 0 53 27.56
Berlin	+ 52 30 16.7	- 11 17.1	9.999075	- 6 1 46.95	- 0 53 34.91
Berne	+ 46 57 8.7	- 11 39.0	9.999216	- 5 37 57.7	- 0 29 45.7
Besançon	+ 47 14 59.0	- 11 38.5	9.999208	- 5 32 9.24	- 0 23 57.20
Bethlehem	+ 40 36 23.4	- 11 31.9	9.999379	- 0 6 40.19	+ 5 1 31.85
Birr Castle	+ 53 5 47.0	- 11 13.3	9.999060	- 4 36 31.1	+ 0 31 40.9
Bogota	+ 4 35 48	- 1 51.5	9.999991	- 0 11 13	+ 4 56 59
Bologna	+ 44 29 47.0	- 11 40.3	9.999279	- 5 53 36.9	- 0 45 24.9
Bombay	+ 18 53 45	- 7 8.1	9.999847	- 9 59 27.7	- 4 51 15.7
Bonn	+ 50 43 45.0	- 11 26.9	9.999120	- 5 36 35.33	- 0 28 23.29
Bordeaux	+ 44 50 6.7	- 11 40.4	9.999271	- 5 6 6.60	+ 0 2 5.44
Bothkamp	+ 54 12 9.6	- 11 5.3	9.999033	- 5 48 43.2	- 0 40 31.2
Breslau	+ 51 6 56.5	- 11 25.0	9.999110	- 6 16 20.88	- 1 8 8.84
Brisbane	- 27 28 0.0	+ 9 32.2	9.999689	- 15 20 17.8	- 10 12 5.8
Brussels (<i>Uccle</i>)	+ 50 47 53	- 11 26.6	9.999118	- 5 25 38.2	- 0 17 26.2
Brussels	+ 50 51 10.7	- 11 26.3	9.999117	- 5 25 40.7	- 0 17 28.7
Budapest	+ 47 29 34.7	- 11 38.0	9.999202	- 6 24 27.4	- 1 16 15.4
Cairo	+ 30 4 38.2	- 10 6.5	9.999632	- 7 13 20.95	- 2 5 8.91
Cambridge (<i>England</i>)	+ 52 12 51.6	- 11 18.9	9.999082	- 5 8 34.79	- 0 0 22.75
Cambridge (<i>Mass.</i>)	+ 42 22 47.6	- 11 37.3	9.999334	- 0 23 41.05	+ 4 44 30.99
Cape of Good Hope	- 33 56 3.4	+ 10 48.0	9.999543	- 6 22 6.78	- 1 13 54.74
Catania	+ 37 30	- 11 16.0	9.999457	- 6 7 52	- 0 59 40
Chapultepec	+ 19 25 17.5	- 7 18.2	9.999838	+ 1 28 26.20	+ 6 36 38.24
Charkow	+ 50 0 10.2	- 11 30.2	9.999138	- 7 33 6.7	- 2 24 54.7
Charlottesville	+ 38 2 1.2	- 11 19.3	9.999444	+ 0 5 53.18	+ 5 14 5.22

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ	Longitude.	
				From Washington.	From Greenwich.
	° ' "	° ' "		h m s	h m s
Chicago (<i>Old Obs.</i>) . . .	+ 41 50 1.0	- 11 35.9	9.999348	+ 0 42 14.69	+ 5 50 26.73
Christiania	+ 59 54 43.7	- 10 8.7	9.998899	- 5 51 5.89	- 0 42 53.85
Cincinnati (<i>New Obs.</i>) . .	+ 39 8 19.5	- 11 25.4	9.999416	+ 0 29 29.25	+ 5 37 41.29
Cincinnati (<i>Old Obs.</i>) . .	+ 39 6 26.5	- 11 25.2	9.999417	+ 0 29 47.01	+ 5 37 59.05
Clinton	+ 43 3 17.0	- 11 38.7	9.999316	- 0 6 34.65	+ 5 1 37.39
Coimbra	+ 40 12 25.8	- 11 30.3	9.999389	- 4 34 37.9	+ 0 33 34.1
Columbia (<i>Missouri</i>) . . .	+ 38 56 51.6	- 11 24.4	9.999421	+ 1 1 6.18	+ 6 9 18.22
Copenhagen	+ 55 41 12.9	- 10 53.1	9.998997	- 5 58 30.96	- 0 50 18.92
Cordoba	- 31 25 15.5	+ 10 22.2	9.999602	- 0 51 23.8	+ 4 16 48.2
Cracow	+ 50 3 51.9	- 11 29.9	9.999137	- 6 28 2.41	- 1 19 50.37
Dantzic	+ 54 21 18.0	- 11 4.1	9.999029	- 6 22 51.6	- 1 14 39.6
Denver	+ 39 40 36.4	- 11 27.9	9.999402	+ 1 51 35.59	+ 6 59 47.63
Dorpat	+ 58 22 47.1	- 10 26.4	9.998934	- 6 55 5.5	- 1 46 53.5
Dresden	+ 51 2 16.8	- 11 25.4	9.999112	- 6 3 6.88	- 0 54 54.84
Dublin	+ 53 23 13	- 11 11.3	9.999053	- 4 42 50.9	+ 0 25 21.1
Dun Echt	+ 57 9 36	- 10 39.2	9.998962	- 4 58 32.0	+ 0 9 40.0
Durham	+ 54 46 6.2	- 11 0.9	9.999019	- 5 1 52.2	+ 0 6 19.8
Düsseldorf	+ 51 12 25	- 11 24.6	9.999108	- 5 35 17.5	- 0 27 5.5
Edinburgh	+ 55 57 23.2	- 10 50.7	9.998991	- 4 55 28.99	+ 0 12 43.05
Evanston (<i>Dearborn</i>) . . .	+ 42 3 33.4	- 11 36.5	9.999342	+ 0 42 30.3	+ 5 50 42.3
Florence (<i>Reale Museo</i>) . .	+ 43 46 4.1	- 11 39.7	9.999298	- 5 53 13.5	- 0 45 1.5
Florence (<i>Arcturi</i>) . . .	+ 43 45 14.4	- 11 39.7	9.999298	- 5 53 15.15	- 0 45 3.11
Geneva	+ 46 11 58.8	- 11 39.9	9.999236	- 5 32 48.81	- 0 24 36.77
Genoa	+ 44 25 9.3	- 11 40.2	9.999281	- 5 43 53.4	- 0 35 41.4
Georgetown	+ 38 54 25.8	- 11 24.2	9.999422	+ 0 0 6.20	+ 5 8 18.24
Glasgow (<i>Missouri</i>) . . .	+ 39 13 45.6	- 11 25.8	9.999414	+ 1 3 5.93	+ 6 11 17.97
Glasgow (<i>Scotland</i>) . . .	+ 55 52 42.6	- 10 51.5	9.998993	- 4 51 1.4	+ 0 17 10.6
Gotha	+ 50 56 37.5	- 11 25.9	9.999114	- 5 51 2.57	- 0 42 50.53
Göttingen	+ 51 31 47.9	- 11 22.8	9.999100	- 5 47 58.4	- 0 39 46.4
Graz	+ 47 4 37.2	- 11 38.8	9.999213	- 6 10 0	- 1 1 48
Greenwich	+ 51 28 38.1	- 11 23.1	9.999101	- 5 8 12.04	0 0 0
Hamburg	+ 53 33 7.0	- 11 10.1	9.999049	- 5 48 5.7	- 0 39 53.7
Hanover	+ 43 42 15	- 11 39.6	9.999300	- 0 19 4.13	+ 4 49 7.91
Harrow	+ 51 34 47.4	- 11 22.6	9.999098	- 5 6 52.1	+ 0 1 19.9
Hastings-on-Hudson . . .	+ 40 59 25	- 11 33.2	9.999369	- 0 12 42.4	+ 4 55 29.6
Haverford	+ 40 0 40.1	- 11 29.4	9.999394	- 0 6 59.34	+ 5 1 12.70
Heidelberg	+ 49 24 35	- 11 32.5	9.999153	- 5 43 0.5	- 0 34 48.5
Helsingfors	+ 60 9 42.6	- 10 5.6	9.998893	- 6 48 1.18	- 1 39 49.14
Hereny	+ 47 15 47.4	- 11 38.4	9.999208	- 6 14 36.75	- 1 6 24.71
Hong Kong	+ 22 18 12.2	- 8 10.7	9.999789	- 12 44 53.9	- 7 36 41.9
Hudson	+ 41 14 42.6	- 11 34.1	9.999363	+ 0 17 32.12	+ 5 25 44.16
Ipswich	+ 52 0 33.0	- 11 20.1	9.999088	- 5 13 7.84	- 0 4 55.80

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	' "		h m s	h m s
Jamaica . . .	+ 18 24 51	- 6 58.7	9.999854	+ 0 3 17.5	+ 5 11 29.5
Jena . . .	+ 50 55 35.6	- 11 26.0	9.999115	- 5 54 32.85	- 0 46 20.81
Kalocsa . . .	+ 46 31 42	- 11 39.6	9.999227	- 6 24 6.3	- 1 15 54.3
Karlsruhe . . .	+ 49 0 29.6	- 11 33.9	9.999163	- 5 41 48.55	- 0 33 36.51
Kasan . . .	+ 55 47 24.2	- 10 52.2	9.998995	- 8 24 40.9	- 3 16 28.9
Kew . . .	+ 51 28 6	- 11 23.2	9.999101	- 5 6 56.9	+ 0 1 15.1
Kiel . . .	+ 54 20 28.6	- 11 4.2	9.999030	- 5 48 47.7	- 0 40 35.7
Kiew . . .	+ 50 27 12.5	- 11 28.2	9.999127	- 7 10 12.75	- 2 2 0.71
Königsberg . . .	+ 54 42 50.6	- 11 1.3	9.999021	- 6 30 10.95	- 1 21 58.91
Kremsmünster . . .	+ 48 3 23.7	- 11 36.7	9.999188	- 6 4 43.6	- 0 56 31.6
La Plata . . .	- 34 54 30	+ 10 56.7	9.999520	- 1 16 35.0	+ 3 51 37.0
Leiden . . .	+ 52 9 20.0	- 11 19.3	9.999084	- 5 26 8.39	- 0 17 56.35
Leipzig . . .	+ 51 20 6.3	- 11 23.9	9.999104	- 5 57 46.06	- 0 49 34.02
Leyton . . .	+ 51 34 34	- 11 22.6	9.999098	- 5 8 11.17	+ 0 0 0.87
Lisbon (<i>Marine Obs.</i>) .	+ 38 42 17.6	- 11 23.3	9.999427	- 4 31 38.5	+ 0 36 33.5
Lisbon (<i>Royal Obs.</i>) .	+ 38 42 31.3	- 11 23.1	9.999427	- 4 31 27.36	+ 0 36 44.68
Liverpool . . .	+ 53 24 3.8	- 11 11.2	9.999053	- 4 55 54.8	+ 0 12 17.2
Lübec . . .	+ 53 51 31.2	- 11 7.9	9.999042	- 5 50 57.59	- 0 42 45.55
Lund . . .	+ 55 41 52.1	- 10 53.0	9.998997	- 6 0 57.07	- 0 52 45.03
Lyons . . .	+ 45 41 40.8	- 11 40.3	9.999248	- 5 27 20.1	- 0 19 8.1
Madison . . .	+ 43 4 37.0	- 11 38.7	9.999316	+ 0 49 25.78	+ 5 57 37.82
Madras . . .	+ 13 4 8.1	- 5 7.6	9.999925	- 10 29 11.4	- 5 20 59.4
Madrid . . .	+ 40 24 30.0	- 11 31.1	9.999384	- 4 53 26.6	+ 0 14 45.4
Manheim . . .	+ 49 29 11.0	- 11 32.2	9.999151	- 5 42 2.56	- 0 33 50.52
Marburg . . .	+ 50 48 46.9	- 11 26.5	9.999118	- 5 43 17.0	- 0 35 5.0
Markree . . .	+ 54 10 31.8	- 11 5.5	9.999034	- 4 34 23.6	+ 0 33 48.4
Marseilles . . .	+ 43 18 19.1	- 11 39.1	9.999310	- 5 29 46.68	- 0 21 34.64
Mauritius . . .	- 20 5 39	+ 7 30.8	9.999828	- 8 58 24.5	- 3 50 12.5
Melbourne . . .	- 37 49 53.3	+ 11 18.1	9.999449	- 14 48 6.18	- 9 39 54.14
Mexico . . .	+ 19 26 1.3	- 7 18.4	9.999838	+ 1 28 14.63	+ 6 36 26.67
Milan . . .	+ 45 27 59.4	- 11 40.4	9.999254	- 5 44 58.01	- 0 36 45.97
Modena . . .	+ 44 38 52.8	- 11 40.4	9.999275	- 5 51 54.8	- 0 43 42.8
Montreal . . .	+ 45 30 17.0	- 11 40.4	9.999253	- 0 13 53.50	+ 4 54 18.54
Montsouris . . .	+ 48 49 18.0	- 11 34.5	9.999168	- 5 17 32.72	- 0 9 20.68
Moscow . . .	+ 55 45 19.8	- 10 52.5	9.998995	- 7 38 29.2	- 2 30 17.2
Mount Hamilton . . .	+ 37 20 24.6	- 11 14.9	9.999461	+ 2 58 22.77	+ 8 6 34.81
Munich . . .	+ 48 8 45.5	- 11 36.5	9.999186	- 5 54 38.17	- 0 46 26.13
Naples . . .	+ 40 51 45.4	- 11 32.8	9.999372	- 6 5 12.9	- 0 57 0.9
Nashville . . .	+ 36 8 54.4	- 11 6.6	9.999490	+ 0 39 0.2	+ 5 47 12.2
Natal . . .	- 29 50 47.4	+ 10 3.7	9.999637	- 7 12 13.22	- 2 4 1.18
Neuchatel . . .	+ 47 0 1.2	- 11 38.9	9.999215	- 5 36 1.90	- 0 27 49.86
New Haven (<i>Old Obs'y</i>)	+ 41 18 36.5	- 11 34.3	9.999361	- 0 16 29.90	+ 4 51 42.14

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ	Longitude.	
				From Washington.	From Greenwich.
	° ' "	' "		h m s	h m s
New Haven (<i>Yale Univ.</i>)	+ 41 19 22.3	- 11 34.4	9.999361	- 0 16 31.48	+ 4 51 40.56
New York (<i>Columb. Coll.</i>)	+ 40 45 23.1	- 11 32.4	9.999375	- 0 12 18.40	+ 4 55 53.64
New York (<i>RUTHERFURD</i>)	+ 40 43 48.5	- 11 32.3	9.999376	- 0 12 15	+ 4 55 57
Nice	+ 43 43 16.7	- 11 39.6	9.999299	- 5 37 24.24	- 0 29 12.20
Nicolaëff	+ 46 58 20.6	- 11 38.9	9.999216	- 7 16 5.9	- 2 7 53.9
Northfield	+ 44 27 41.6	- 11 40.3	9.999280	+ 1 4 23.77	+ 6 12 35.81
Oakland (<i>Cal.</i>)	+ 37 48 5	- 11 17.9	9.999449	+ 3 0 54.58	+ 8 9 6.62
Odessa	+ 46 28 36.2	- 11 39.6	9.999228	- 7 11 14.3	- 2 3 2.3
Ogden	+ 41 13 8.6	- 11 34.0	9.999363	+ 2 19 47.52	+ 7 27 59.56
O-Gyalla	+ 47 52 27.3	- 11 37.1	9.999192	- 6 20 57.63	- 1 12 45.59
Olmütz	+ 49 35 43	- 11 31.8	9.999149	- 6 17 19.9	- 1 9 7.9
Oxford (<i>Mississippi</i>)	+ 34 22 12.6	- 10 52.0	9.999533	+ 0 49 55.05	+ 5 58 7.09
Oxford (<i>Radcliffe</i>)	+ 51 45 36.0	- 11 21.6	9.999094	- 5 3 9.4	+ 0 5 2.6
Oxford (<i>University</i>)	+ 51 45 34.2	- 11 21.6	9.999094	- 5 3 11.64	+ 0 5 0.40
Padua	+ 45 24 2.5	- 11 40.4	9.999256	- 5 55 41.24	- 0 47 29.20
Palermo	+ 38 6 44	- 11 19.7	9.999442	- 6 1 36.7	- 0 53 24.7
Paramatta	- 33 48 49.8	+ 10 46.9	9.999546	-15 12 12.2	-10 4 0.2
Paris	+ 48 50 11.2	- 11 34.5	9.999168	- 5 17 32.99	- 0 9 20.95
Philadelphia	+ 39 57 7.5	- 11 29.2	9.999396	- 0 7 33.58	+ 5 0 38.46
Plonsk	+ 52 37 40.0	- 11 16.4	9.999072	- 6 29 44.05	- 1 21 32.01
Pola	+ 44 51 49.0	- 11 40.4	9.999270	- 6 3 35.22	- 0 55 23.18
Portsmouth	+ 50 48 3.0	- 11 26.6	9.999118	- 5 3 47.2	+ 0 4 24.8
Potsdam	+ 52 22 56	- 11 17.9	9.999078	- 6 0 27.9	- 0 52 15.9
Poughkeepsie	+ 41 41 18	- 11 35.5	9.999351	- 0 12 38.4	+ 4 55 33.6
Prague	+ 50 5 18.5	- 11 29.8	9.999136	- 6 5 53.5	- 0 57 41.5
Princeton	+ 40 20 57.8	- 11 30.8	9.999385	- 0 9 34.54	+ 4 58 37.50
Princeton (<i>Halsted</i>)	+ 40 20 55.8	- 11 30.9	9.999386	- 0 9 32.60	+ 4 58 39.44
Providence (<i>SEAGRAVE</i>)	+ 41 49 46	- 11 35.9	9.999348	- 0 22 34.52	+ 4 45 37.52
Providence (<i>Ladd</i>)	+ 41 50 21	- 11 35.9	9.999348	- 0 22 36.09	+ 4 45 35.95
Pulkowa	+ 59 46 18.7	- 10 10.4	9.998902	- 7 9 30.71	- 2 1 18.67
Quebec	+ 46 47 59.2	- 11 39.2	9.999220	- 0 23 19.40	+ 4 44 52.64
Quito	- 0 14 0	+ 0 5.7	0.000000	+ 0 7 8	+ 5 15 20
Riga	+ 56 57 7	- 10 41.3	9.998967	- 6 44 40	- 1 36 28
Rio de Janeiro	- 22 54 23.8	+ 8 21.1	9.999779	- 2 15 30.63	+ 2 52 41.41
Rochester	+ 43 9 16.8	- 11 38.8	9.999314	+ 0 2 9.74	+ 5 10 21.78
Rome (<i>Coll. Rom.</i>)	+ 41 53 53.6	- 11 36.1	9.999346	- 5 58 7.5	- 0 49 55.5
Rome (<i>Capitol</i>)	+ 41 53 33.5	- 11 36.0	9.999346	- 5 58 8.56	- 0 49 56.52
San Fernando	+ 36 27 41.5	- 11 8.9	9.999483	- 4 43 22.4	+ 0 24 49.6
San Francisco	+ 37 47 24.1	- 11 17.8	9.999450	+ 3 1 30.47	+ 8 9 42.51
Santiago de Chile	- 33 26 42.0	+ 10 43.4	9.999555	- 0 25 25.74	+ 4 42 46.30
Schwerin	+ 53 37 37.9	- 11 9.6	9.999047	- 5 53 52.9	- 0 45 40.9
South Hadley	+ 42 15 18.2	- 11 37.0	9.999337	- 0 17 51.75	+ 4 50 20.29

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	° ' "		h m s	h m s
Speier	+49 18 55.4	- 11 32.9	9.999156	- 5 41 57.6	- 0 33 45.6
St. Louis	+38 38 3.6	- 11 22.7	9.999429	+ 0 52 37.07	+ 6 0 49.11
St. Petersburg	+59 56 29.7	- 10 8.4	9.998898	- 7 9 25.5	- 2 1 13.5
St. Petersburg (<i>Univ.</i>)	+59 56 32.0	- 10 8.4	9.998898	- 7 9 23.45	- 2 1 11.41
Stockholm	+59 20 34.0	- 10 15.5	9.998912	- 6 20 26.04	- 1 12 14.00
Stonyhurst	+53 50 40	- 11 8.0	9.999042	- 4 58 19.36	+ 0 9 52.68
Strassburg (<i>New Obs.</i>)	+48 35 0.8	- 11 35.3	9.999174	- 5 39 16.69	- 0 31 4.65
Strassburg (<i>Old Obs.</i>)	+48 34 53.8	- 11 35.3	9.999174	- 5 39 14.53	- 0 31 2.49
Sydney	-33 51 41.1	+ 10 47.3	9.999545	-15 13 0.9	-10 4 48.9
Syracuse	+43 2 13.1	- 11 38.6	9.999317	- 0 3 38.68	+ 5 4 33.36
Tacubaya	+19 24 17.5	- 7 17.8	9.999839	+ 1 28 34.45	+ 6 36 46.49
Taschkent	+41 19 32.2	- 11 34.4	9.999361	- 9 45 22.84	- 4 37 10.80
Tokio	+35 39 17.5	- 11 2.8	9.999502	-14 27 10.0	- 9 18 58.0
Toronto	+43 39 35.9	- 11 39.6	9.999301	+ 0 9 22.61	+ 5 17 34.65
Toulouse	+43 36 45.3	- 11 39.5	9.999302	- 5 14 3.1	- 0 5 51.1
Trieste	+45 38 45.4	- 11 40.3	9.999250	- 6 3 15.05	- 0 55 3.01
Troy (<i>N. Y.</i>)	+42 43 52.9	- 11 38.1	9.999325	- 0 13 29.75	+ 4 54 42.29
Tulse Hill	+51 26 47.0	- 11 23.3	9.999102	- 5 7 44.35	+ 0 0 27.69
Turin	+45 4 8.4	- 11 40.4	9.999265	- 5 38 59.2	- 0 30 47.2
Twickenham	+51 27 4.2	- 11 23.3	9.999102	- 5 6 58.9	+ 0 1 13.1
Upsala (<i>New Obs.</i>)	+59 51 29.4	- 10 9.3	9.998900	- 6 18 42.27	- 1 10 30.23
Utrecht	+52 5 9.5	- 11 19.7	9.999086	- 5 28 43.7	- 0 20 31.7
Venice	+45 25 49.5	- 11 40.4	9.999255	- 5 57 37.8	- 0 49 25.8
Vienna (<i>Josephstadt</i>)	+48 12 53.8	- 11 36.2	9.999183	- 6 13 37.3	- 1 5 25.3
Vienna (<i>New Obs.</i>)	+48 13 55.4	- 11 36.2	9.999183	- 6 13 33.5	- 1 5 21.5
Vienna (<i>Old Obs.</i>)	+48 12 35.5	- 11 36.3	9.999184	- 6 13 43.78	- 1 5 31.74
Vienna (<i>Ottakring</i>)	+48 12 47.2	- 11 36.2	9.999183	- 6 13 23.15	- 1 5 11.11
Warsaw	+52 13 5.7	- 11 18.9	9.999082	- 6 32 19.4	- 1 24 7.4
Washington	+38 53 38.8	- 11 24.1	9.999422	0 0 0	+ 5 8 12.04
Washington (<i>New Obs.</i>)	+38 55 17.6	- 11 24.2	9.999422	+ 0 0 4.11	+ 5 8 16.15
Washington (<i>Smithsonian</i>)	+38 53 17.3	- 11 24.1	9.999422	- 0 0 5.8	+ 5 8 6.2
West Point (<i>Old Obs.</i>)	+41 23 31	- 11 34.6	9.999359	- 0 12 22.71	+ 4 55 49.33
West Point (<i>New Obs.</i>)	+41 23 22.1	- 11 34.6	9.999359	- 0 12 21.49	+ 4 55 50.55
Wilhelmshaven	+53 31 52.0	- 11 10.3	9.999050	- 5 40 47.25	- 0 32 35.21
Williamstown (<i>Mass.</i>)	+42 42 30	- 11 38.0	9.999325	- 0 15 22	+ 4 52 50
Williamstown (<i>Victoria</i>)	-37 52 7.2	+ 11 18.3	9.999448	-14 47 50.8	- 9 39 38.8
Wilna	+54 40 59.1	- 11 1.6	9.999021	- 6 49 21.0	- 1 41 9.0
Windsor	-33 36 28.9	+ 10 44.9	9.999551	-15 11 32.81	-10 3 20.77
Zürich	+47 22 40.0	- 11 38.2	9.999205	- 5 42 24.4	- 0 34 12.4

ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

PART I—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

THE greater portion of this Ephemeris, embracing the positions of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain fixed stars; the ephemerides of the planets Mercury, Venus, Mars, Jupiter, and Saturn, is designed for the special use of navigators. The remainder contains the ephemerides of Uranus and Neptune, the heliocentric co-ordinates of the seven major planets, the rectangular equatorial co-ordinates of the sun, the moon's longitude and latitude, data for the libration of the moon, the obliquity of the ecliptic, the equation of the equinoxes, etc.

TIME.

Astronomers make use of several different kinds of time; mean solar time; true, or apparent solar time; and sidereal time.

Solar Time.—Solar time is that used for all the purposes of ordinary life, and is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour-angle of the sun is called *Solar Time*. This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the same meridian are not exactly equal, owing to the varying motion of the earth around the sun, and to the obliquity of the ecliptic. The intervals between the sun's transits over the meridian being unequal it is impossible to regulate a clock or chronometer so that it shall accurately follow the sun.

To avoid the irregularity which would arise from using the true sun as the measure of time, a fictitious sun, called the *Mean Sun*, is supposed to move in the equator with a uniform velocity. This mean sun is supposed to keep, on the average, as near the real sun as is consistent with perfect uniformity of motion: it is sometimes in advance of it, and sometimes behind it, the greatest deviation being about 16 minutes of time.

Mean Solar Time, which is perfectly equable in its increase, is measured by the motion of this mean sun. The clocks in ordinary use and the chronometers used by navigators are regulated to mean solar time.

True, or Apparent Solar Time is measured by the motion of the real sun.

The difference between apparent and mean time is called the *Equation of Time*. By means of it, we change apparent to mean time, or the reverse. Thus, if the apparent time be given, the mean time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I of the Calendar for each month. If the mean time be given, the apparent time is obtained by applying the equation of time as directed by the precept on page II of the Calendar.

Sidereal Time.—Sidereal time is measured by the daily motion of the stars; or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascension of the stars is counted. This point is the vernal equinox, and its hour-angle is called *Sidereal Time*. Astronomical clocks, regulated to sidereal time, are called sidereal clocks.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over the meridian, and its next succeeding return to the same meridian. It is about $3^m 56^s$ shorter than the mean solar day; $365\frac{1}{4}$ solar days, or a year, being divided into $366\frac{1}{4}$ sidereal days.

It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 21st of each year the sidereal clock agrees with the mean time, or ordinary clock, and the former gains on the latter about $3^m 56^s$ per day, so that at the end of a year it will have gained an entire day, and will again agree with the mean time clock.

Day.—The *Civil Day*, according to the customs of society, commences at midnight, and comprises twenty-four hours, from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each, of which the first is marked A. M., and the last is marked P. M.

The *Astronomical Day* begins at noon on the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical as well as the civil time may be either apparent or mean, according as it is reckoned from apparent noon or from mean noon.

The civil day begins twelve hours before the astronomical day; therefore the first period of the civil day answers to the last part of the preceding astronomical day, and the last period of the civil day corresponds to the first part of the same astronomical day. Thus, January 9th, 2 o'clock, A. M., civil time, is January 8th, 14^h, astronomical time; and January 9th, 2 o'clock, P. M., civil time, is also January 9th, 2^h, astronomical time. The rule, then, for the transformation of civil time into astronomical time is this: *If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.*

To change astronomical to civil time, we simply write P. M. after it, if it is less than 12 hours. If greater than 12 hours, we subtract 12 hours from it, add 1 to the days, and write A. M. For example, January 3d, 23 hours, astronomical time, is January 4th, 11 o'clock, A. M., civil time.

If the longitude from Greenwich be expressed in time, and, when *west*, added to the local time, or, when *east*, subtracted from the local time, the result is the corresponding Greenwich time. If the local mean time is used, the result is the Greenwich mean time, which ordinarily is that required for the use of this Ephemeris. The rule is the same, whether we use mean or sidereal time.

THE CALENDAR.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, the contents of which are as follow:—

Page I contains, for Greenwich apparent noon of each day, *The Sun's Apparent Right Ascension and Declination*, and the *Equation of Time*. Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of any quantity for any given Greenwich apparent time. The hourly differences are given for the instant of apparent noon at Greenwich, and, when greater accuracy, is required, should be first interpolated for half the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is $0^h 0^m 0^s$. The longitude from Greenwich expressed in time, if west, is at that instant the Greenwich apparent time, or time after Greenwich apparent noon; if east, it is time before Greenwich apparent noon. The longitude of any place is therefore employed in reducing the quantities on this page to apparent noon at the place.

The right ascension of the sun thus reduced is the sidereal time of local apparent noon. The difference between it and the clock time of the meridian passage of the sun is the error of the clock on sidereal time.

The declination of the sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the sun.

As an example of the use of page I:—

Let the sun's declination be required at apparent noon, 1896, May 31, at a place whose longitude is $179^{\circ} 40'$, or $11^{\text{h}} 58^{\text{m}} 40^{\text{s}}$ east from Greenwich:

Local apparent time	May 31,	$\begin{smallmatrix} \text{h} & \text{m} & \text{s} \\ 0 & 0 & 0 \end{smallmatrix}$
Longitude from Greenwich (subtractive)		$11 \ 58 \ 40$
Greenwich apparent time	May 30,	$12 \ 1 \ 20$

Reducing the minutes and seconds to decimals of an hour, we find that this moment is $12^{\text{h}}.022$ after Greenwich apparent noon on May 30, or $11^{\text{h}}.978$ before Greenwich apparent noon on May 31.

On page 74 of the Ephemeris we find that the change of declination in one hour is

May 30, at Greenwich apparent noon	+	21.58
May 31, at Greenwich apparent noon	+	20.63
Difference for one day		0.95

If we want to be very exact, we find the amount of this hourly difference for the time which is half way between Greenwich noon and the time of observation; that is, for 6 hours after Greenwich noon of the 30th, this being half of 12 hours. Six hours is 0.25 of a day; so the calculation is as follows:—

Difference for one hour, May 30	21.58
Change for 0.25 of a day or $0''.95 \times 0.25$	— 0.24
Difference at 6 hours after noon	21.34
$21''.34 \times 12.022 = 256''.5 = 4' 16''.5$	
Declination at Greenwich noon, May 30	N. 21 53 26.8
Change in 12.022 hours (additive)	4 16.5
Sun's declination at time of observation	N. 21 57 43.3

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is $11^{\text{h}}.978$ before Greenwich noon of May 31; half this interval is about 0.25 of a day, and the hourly motion for the middle of the interval is $20''.87$. Then, we find:—

Declination at Greenwich noon, May 31	N. 22 1 53.3
Product of $20''.87 \times 11.978 = 250''$ (subtractive)	4 10.0
Sun's declination at time of observation	N. 21 57 43.3

It will always be well to make the calculation by both methods, as their agreement will show both to be right.

At sea it is ordinarily sufficient to have the declination to the nearest half minute, and the reduction may be found by Table 12 of BOWDITCH'S *American Practical Navigator*.

The equation of time, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the apparent time, or the time given by an observation of the sun, to obtain the mean time. The heading of the column directs the manner in which the equation is to be applied. When there is a change in the course of the month from addition to subtraction or the reverse (as in the months of April and June), the two different directions are separated by a line, while a corresponding line below points out the dates between which the change takes place. The equation of time, as given on page I, is the mean time of apparent noon, or the hour-angle of the mean sun at that instant.

The Sun's Semidiameter and the *Sidereal Time of Semidiameter Passing Meridian* are also given on page I. The sun's semidiameter is used in reducing the altitude of the upper or lower limb of the sun to the altitude of the center; and in reducing the angular distance of the limb from the moon or some other object, to the distance from the center of the sun. The sidereal time of semidiameter passing the meridian is employed in obtaining the passage of the sun's center over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the first, or western, limb; and to be subtracted from the time of transit of the second, or eastern, limb.

Page II contains, for Greenwich mean noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, the *Equation of Time*, and the *Sidereal Time of Mean Noon*. The hourly changes of these quantities are also given, and may be used in reducing them to any Greenwich mean time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required, in the way described in explaining the calculation of the declination.

The right ascension and declination on pages I and II are affected by aberration, and therefore denote the *apparent* position of the *true* sun. Page II is more conveniently used when the mean time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to mean time. The quantities on this page can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the mean time from observations of the sun, and the latitude from observations out of the meridian. The heading of the column directs the manner in which it is to be applied to mean time to obtain the apparent time.

The equation of time, as given on page II, is the apparent time of mean noon; and is equivalent to the hour-angle of the true sun at the instant of mean noon.

The sidereal time of mean noon is also the right ascension of the mean sun at Greenwich mean noon. It may be reduced for the longitude, or to any Greenwich mean time, by using the hourly difference, $9^{\text{s}}.8565$; or by Table III, appended to this volume, for reducing intervals of mean solar to sidereal time. Table 9 of BOWDITCH'S *Navigator* may be used for the same purpose.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the R. A. of the mean sun for this time, as last explained: this being added to the local mean time will give the sidereal time.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a sidereal interval to a mean time interval, in Table II, appended to this volume, or Table 8 of BOWDITCH'S *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^{\text{s}}.8296$ by the hours and parts of an hour of the given sidereal time.

As examples of the use of page II:—

1.—Let the sun's right ascension and the equation of time be required for 1896, May 15, $9^{\text{h}} 2^{\text{m}} 30^{\text{s}}$, A. M., mean time, at a place whose longitude is $100^{\circ} 10'$, or $6^{\text{h}} 40^{\text{m}} 40^{\text{s}}$, west of Greenwich.

Local astronomical mean time	.	.	.	May 14.	^h	^m	^s
Longitude from Greenwich (additive)	21	2	30
Greenwich mean time	.	.	.	May 15.	6	40	40
					3	43	10 = $3^{\text{h}} 71^{\text{m}} 9^{\text{s}}$

<i>Sun's Right Ascension.</i>			<i>Equation of Time.</i>		
	<i>h</i>	<i>m</i>	<i>s</i>		<i>m</i>
May 15, Greenwich noon	3	31	0.87	May 15, noon	3 49.55 (additive)
H. D. $9^{\circ}.896 \times 3.7194$	+	0	36.81	H. D. $-0^{\circ}.039 \times 3.72$	- 0.14
	3	31	37.68		3 49.41

In this case, the hourly differences interpolated to half the interval, or 1^h.9 after noon, have been used.

The equation of time in this example is additive to mean time. Its reduction could also have been found by Table 12 of BOWDITCH's *Navigator*.

2.—If the sidereal time is required for the same date and time, we have:—

	<i>h</i>	<i>m</i>	<i>s</i>
May 15, Sidereal Time (at Greenwich mean noon)	3	34	50.42
Hourly difference $9^{\circ}.8565 \times 3.7194$	+	0	36.66
Add the local astronomical mean time	21	2	30.00
The required sidereal time is (rejecting 24 ^h)	0	37	57.08

The reduction 0^m 36.66 could have been found in Table III corresponding to the Greenwich mean time 3^h 43^m 10^s or by Table 9 of BOWDITCH's *Navigator*.

3.—On 1896, May 15, A. M., at a place whose longitude is 100° 10' W., suppose the sidereal time to be 0^h 36^m 37^s.16, and that the corresponding mean time is required.

The astronomical day is May 14; the longitude in time, + 6^h 40^m 40^s, or + 6^h.678.

	<i>h</i>	<i>m</i>	<i>s</i>
May 14, Sidereal Time (at Greenwich mean noon)	3	30	53.86
The H. D. $9^{\circ}.8565 \times 6.678$, or the reduction for 6 ^h 40 ^m 40 ^s in Table III	+	1	5.82
The sidereal time of local mean noon	3	31	59.68
The given sidereal time (+ 24 ^h , if necessary for the following subtraction)	24	36	37.16
Subtracting the first from the second gives the sidereal interval from noon	21	4	37.48 = 21 ^h .07708
— $9^{\circ}.8296 \times 21.07708$ or the reduction for 21 ^h 4 ^m 37 ^s .48 in Table II	—	3	27.18
The required astronomical mean time is	May 14,	21	1 10.30

Page III contains, for Greenwich mean noon of each day, *The Sun's True Longitude* and *Latitude*, and the *Logarithm of the Radius Vector of the Earth*. The longitudes of the sun are the true longitudes, not corrected for aberration. The longitude is given in two columns, headed λ and λ' ; λ representing the sun's longitude counted from the true equinox of the date; and λ' , the same co-ordinate counted from the mean equinox of the beginning of the year, (January 1^d.0). A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The latitude is referred to the ecliptic of the date.

The last column on page III contains the *Mean Time of Sidereal Noon*; that is, the number of hours, minutes and seconds after Greenwich mean noon when the first point of Aries passes the meridian of Greenwich. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich sidereal time by means of the hourly difference, — $9^{\circ}.8296$. The reduction, however, can be taken directly from Table II for reducing intervals of sidereal time to mean solar time; or from Table 8 of BOWDITCH's *Navigator*.

This column may be used in converting sidereal time to mean time instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal noon and the given sidereal time is less than 24 hours. Were it more than 24 hours, the mean time of sidereal noon should be taken out for May 13, that is the preceding astronomical day.

	<i>h</i>	<i>m</i>	<i>s</i>
May 14, the mean time of Greenwich sidereal noon is	20	25	44.78
The H. D. — $9^{\circ}.8296 \times 6.678$, or the reduction for longitude, Table II	—	1	5.64
The mean time of local sidereal noon	20	24	39.14
Add the given sidereal time	0	36	37.16 = 0 ^h .6103
The sum is	21	1	16.30
— $9^{\circ}.8296 \times 0.6103$, or the reduction for 0 ^h 36 ^m 37 ^s .2 in Table II	—	0	6.00
The required astronomical mean time	May 14,	21	1 10.30

Page IV contains *The Moon's Semidiameter* and *Equatorial Horizontal Parallax*, for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time, in the same way as the sun's declination and the equation of time in the preceding examples. The sign plus or minus prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.272, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1896, January 11, 10^h, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of January 11 is 3".8; then,

$$12^h : 10^h = 3''.8 : 3''.2,$$

which is the correction to be subtracted from the semidiameter at noon, because the semidiameter is decreasing. The moon's semidiameter then, for January 11, 10^h, is 15' 35".6.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for half the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Upper Transit at Greenwich*, which is given on page IV to tenths of a minute, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude converted into time, the local time of the moon's meridian passage at any other place, may be computed. The reduction may be taken by simple inspection from BOWDITCH'S Table 11. The last column of this page contains the *Age* of the moon, or the time elapsed since the preceding new moon, to tenths of a day.

Pages V—XII contain *The Moon's Right Ascension* and *Declination*, for each day and hour of Greenwich mean time. They are accompanied with columns of differences for one minute, which are also given at each hour. The Greenwich mean time, which is required for taking out these quantities, may be taken from a well-regulated chronometer, or obtained by applying the longitude converted into time, to the local mean time of the observer. The right ascension or declination is taken out for the day and hour of the Greenwich mean time; the *Diff. for 1 Minute* multiplied by the minutes and parts of a minute of the Greenwich time, and the product added to, or subtracted from the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1896, August 1, 10^h 10^m 30^s, astronomical mean time at Greenwich:—

<i>Right Ascension.</i>				<i>Declination.</i>			
		<i>h</i>	<i>m</i>	<i>s</i>		<i>°</i>	<i>'</i>
August 1, 10 ^h	.	.	.	2 30 3.54	.	N.	20 12.45.4
Diff. 2 ^d .0022 × 10.5	.	.	.	= + 21.02	10 ^h .063 × 10.5	= +	1 45.7
August 1, 10 ^h 10 ^m 30 ^s	.	.	.	2 30 24.56	.	N.	20 14 31.1

The differences interpolated for 5^m.2 = 0^h.09 are, for the right ascension 2^d.0022, and for the declination 10^h.063, which have been used for greater precision.

Page XII contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII—XVIII contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, and from the four larger planets and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore astronomical. All the distances that can be observed on the same day, are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W. or E. is affixed to the name of the sun, planet or star, to indicate that it is on the west, or east side of the moon.

An observer on the earth's surface having measured a lunar distance, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the true or geocentric distance, that is, the distance as it would have appeared from the centre of the earth at the moment of observation. With this distance and the distances in the Ephemeris of the same bodies on the same day, the Greenwich mean time of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris, between every two successive distances, the logarithm of the seconds of time in which the distance changes 1"; or, as it is usually called, the *Proportional Logarithm of the Difference*. It is given for the middle instant of the two hours between which it is placed.

For computing the Greenwich time we have the following rule:—

Find in the Almanac the two distances between which the true distance falls; take out the nearer of these, the hours of Greenwich time over it, and the P. L. of Diff. between them.

Find the difference between the true distance and the distance taken from the Almanac; and from the proportional logarithm of this difference, as found in the Navigator (Table 45), subtract the P. L. of Diff. taken from the Almanac.

The result is the proportional logarithm of an interval of time to be added to the hours of Greenwich time, taken from the Almanac, when the earlier Almanac-distance is used; to be subtracted from the hours of Greenwich time, when the later Almanac-distance is used.

Another method is, to add the common logarithm of the difference of the true and the Almanac-distances to the P. L. of Diff. of the Almanac; the sum will be the common logarithm of the correction to be applied to the hours of Greenwich time. Table 34 of BOWDITCH'S *Navigator* saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the P. L. of Diff. in the Ephemeris varies, the Greenwich time found by the methods just described may not be sufficiently exact. To correct it for such variation, or second difference, take the difference between the P. L. of Diff. used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones). With this difference, and the first correction of the Greenwich time already found, enter Table I, appended to this volume, and take out the corresponding seconds, which are to be added to the approximate Greenwich time when the Prop. Logs. in the Ephemeris are decreasing; and subtracted when they are increasing.

Thus the Greenwich mean time of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer-time and the Greenwich mean time will be the error of the chronometer on Greenwich time as found from the lunar distance. In this way lunar distances can be used as a check upon the chronometer. By a series of carefully observed lunar distances on both sides of the moon, the chronometer-error may generally be ascertained within 20 or 30 seconds.

If the observer has found the local mean time of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the lunar distance will be his longitude. A longitude derived by this method should always be considered as uncertain by 5' or more.

As an example of finding the Greenwich mean time from a lunar distance, suppose that in 1896, March 24, the corrected distance of the moon's centre from that of Aldebaran is 59° 1':—

Corrected distance	59	1	0	
Distance in Ephemeris March 24. XII ^b	53	26	41	P. L. 0.2394
Difference	0	34	19	P. L. 0.7198
				P. L. 0.4804
Time from XII ^b (after)	+	0	59	33
Corr. for 2d Diff., Table I	+			6
Greenwich mean time March 24				
	12	59	39	

By a table of common logarithms, or a table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:—

From Ephemeris	P. L.	0.2394
Diff. of distances, $34' 19'' = 2059''$	log	<u>3.3137</u>
Red. of Greenwich time, $3573^s = 0^h 59^m 33^s$	log	3.5531

The result is the same as by the previous method.

Pages 218—249 contain the geocentric ephemerides of the seven major planets. The positions are referred to the equator and true equinox of the date, and corrected for aberration; they are, therefore, apparent positions. All the data except meridian passage are given for the moment of Greenwich mean noon. The column *Meridian Passage* gives the hour, minute and tenth of that passage of the planet over the meridian of Greenwich which occurs next after the noon of the date.

The right ascension and declination of a planet are required whenever it has been observed for time, latitude or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples for the sun, previously given. The local mean time of passage across any other meridian can be found by dividing the daily differences by 24, and multiplying the quotient by the hours and fractions of the longitude of the place. The product is subtractive from the time of Greenwich passage when the place is east of Greenwich, and additive when west. The corrections can never exceed one-half the change for one day.

Pages 250—263 contain the heliocentric positions of the seven major planets, and the logarithms of their distances from the earth. The heliocentric longitude is reckoned, not from the true equinox, as in the preceding ephemerides, but from the mean equinox of the date. It is, therefore, necessary to apply nutation, if the longitude from the true equinox is required. The daily motion is given for the moment of Greenwich mean noon. The column *Reduction to Orbit* gives the correction to be applied to the heliocentric longitudes in order to obtain the longitude counted along the orbit of the planet. This longitude is equal to the distance of the node from the mean equinox, plus the distance of the planet from the node. The heliocentric latitude is counted from the moving plane of the ecliptic. The *Logarithm of Radius Vector* is the logarithm of the distance of the centre of the planet from that of the sun, at each Greenwich mean noon given in the first column. The two last columns give, in the same way, the logarithm of the true distance of the centre of the planet from that of the earth. The one column gives the quantity for the Greenwich noon indicated on the left hand side of the page, and the other for the noon which is midway between that date and the date next below it. In the case of Mercury, this intermediate date is mean noon of the day immediately following; in the case of Venus, Mars, Jupiter, and Saturn, it is mean noon of the second day following; and in the case of Uranus and Neptune, mean noon of the fourth day following.

Pages 264—271 contain the rectangular co-ordinates of the centre of the sun, referred to the centre of the earth as the origin, and to the true equator and equinox of each date as the circle and point of reference. Each co-ordinate is given first for Greenwich mean noon, and in the column following for mean midnight of the same day. The columns *Reduc. to Mean Eq'x of Jan. 1.0* give the corrections to be applied to the co-ordinates for noon in order to obtain the corresponding co-ordinates referred to the mean equator and the mean equinox of January 1.0.

Pages 272—275 give the longitude and latitude of the moon for every Greenwich mean noon and midnight. Both quantities are referred to the true ecliptic and equinox of the date.

Pages 276 and 277 contain the position of the moon's equator and the mean longitude of the moon, and a table for computing the libration of the moon. The epochs of greatest libration of the moon, together with the formulæ for finding the libration in longitude and latitude are given on page 417.

Page 278 contains, for each tenth Greenwich mean noon, the values of the principal elements arising from the motion of the equinox, and also the aberration and parallax of the sun. The column *Apparent Obliquity of the Ecliptic* (HANSEN) gives the true inclination of the earth's equator to the ecliptic, without correction for the terms depending on the moon's longitude. The *Equation of Equinoxes* is really the astronomical nutation; that given *In Longitude* is the correction to be applied to the longitude of the body referred to the mean equinox, in order to obtain that longitude as referred to the true equinox. When the correction is positive, the true longitudes are greater than those referred to the mean equinox; while the contrary is true when the correction has the negative sign. The equation *In R. A.* is equal to that in longitude, multiplied by the cosine of the obliquity of the ecliptic.

The next column gives the *Precession of Equinoxes in Longitude*, from January 1.0 to each of the dates following. *The Sun's Aberration* is the quantity which is to be applied to the true longitude of the sun in order to obtain its apparent longitude. The correction being negative shows that the apparent longitude as affected by aberration is always less than the true longitude. *The Sun's Equatorial Horizontal Parallax*, given in the next column, is the angle subtended by the radius of the earth's equator, as seen from the centre of the sun.

PART II—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Page 280 contains the formulæ for reducing the positions of the fixed stars, using the notation of BESSEL, and the constants of PETERS and STRUVE. The formulæ by which the star-numbers are computed are also given.

Pages 281—284 contain the logarithms of the *Besselian Star Numbers*, *A, B, C, D*, for each Washington mean midnight. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent place at the dates for which the numbers are given. If used in accordance with the English and French notation, the pair of quantities *A* and *B* must be interchanged with the pair *C* and *D*; that is, *A* must be interchanged with *C*, and *B* with *D*. In the first column along with the solar day is given, for certain dates, the sidereal hour of Washington mean midnight. The sidereal time for which any set of quantities is given can be found by interpolation from these numbers.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers:—

Computation of the apparent place of 41 Libræ for 1896, March 10, for the upper transit at Washington.

	log <i>a</i>	0.5366	log <i>b</i>	8.1370	log <i>c</i>	8.6253 <i>n</i>	log <i>d</i>	8.7518 <i>n</i>
(Page 281)	log <i>A</i>	9.5583	log <i>B</i>	0.9382 <i>n</i>	log <i>C</i>	1.2681 <i>n</i>	log <i>D</i>	0.4886
	log <i>a'</i>	1.0793 <i>n</i>	log <i>b'</i>	9.9037	log <i>c'</i>	9.1764	log <i>d'</i>	9.2889
	log <i>A a</i>	0.0949	log <i>B b</i>	9.0752 <i>n</i>	log <i>C c</i>	9.8934	log <i>D d</i>	9.2404 <i>n</i>
	log <i>A a'</i>	0.6376 <i>n</i>	log <i>B b'</i>	0.8419 <i>n</i>	log <i>C c'</i>	0.4445 <i>n</i>	log <i>D d'</i>	9.7775

<i>Mean Place, 1896 0,</i>	$a_0 =$	$15^{\text{h}} 32^{\text{m}} 55.278^{\text{s}}$	$\delta_0 =$	$-18^{\circ} 57' 32.84''$
	<i>A a</i> =	+ 1.244	<i>A a'</i> =	— 4.34
	<i>B b</i> =	— 0.119	<i>B b'</i> =	— 6.95
	<i>C c</i> =	+ 0.782	<i>C c'</i> =	— 2.78
	<i>D d</i> =	— 0.174	<i>D d'</i> =	+ 0.60
	<i>E</i> =	+ 0.001	$\tau \mu' =$	— 0.01
	$\tau \mu =$	+ 0.001		

<i>Apparent Place, 1896, Mar. 10,</i>	$a = 15^{\text{h}} 32^{\text{m}} 57.013^{\text{s}}$	$\delta = -18^{\circ} 57' 46.32''$
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Pages 285—292 contain the *Independent Star-Numbers*, which can be used for the same purpose. The column τ gives the fraction of the year from the beginning of the fictitious year to each date. These quantities are connected with those of BESSEL by the relations given on page 280, where are also found the formulæ and precepts for the application of both systems of numbers. In order to use the Besselian numbers, it is necessary to have the values of the star-constants, *a, b, c, d, a', b', c', d'*. The independent star-numbers are

given in order that the apparent place of the star may be determined when it is not convenient to compute these numbers.

The following is an example of the reduction of a star to apparent place by the independent star-numbers:—

Computation of the apparent place of 41 Libræ for 1896, March 10, for the upper transit at Washington.

$\alpha^{\circ} = 233^{\circ} 14'$		$\delta_0 = - 18^{\circ} 57.5'$	
$G = 309\ 54$		$G + \alpha_0 = 183\ 8$	
$H = 279\ 26$		$H + \alpha_0 = 152\ 40$	
$\log \tau$	8.8239	$\log \tau$	8.8239
$\log g$	1.0533	$\log h$	1.2741
$\log \sin (G + \alpha_0)$	8.7377 <i>n</i>	$\log \sin (H + \alpha_0)$	9.6620
$\log \tan \delta_0$	9.5360 <i>n</i>	$\log \sec \delta_0$	0.0242
$\log (g)$	8.1509	$\log (h)$	9.7842
		<i>Apparent R. A.,</i>	$a = 15\ 32\ 57.013$
$\log g$	1.0533	$\log h$	1.2741
$\log \cos (G + \alpha_0)$	9.9994 <i>n</i>	$\log \cos (H + \alpha_0)$	9.9486 <i>n</i>
$\log (g')$	1.0527 <i>n</i>	$\log \sin \delta_0$	9.5117 <i>n</i>
		$\log (h')$	0.7344
		$\tau \mu =$	$- 0.01$
		<i>Apparent Dec.</i>	$\delta = - 18\ 57\ 46.32$
$\log i$	0.9056 <i>n</i>		
$\log \cos \delta_0$	9.9758		
$\log (i)$	0.8814 <i>n</i>		

Pages 293—301 contain the mean places of three hundred and eighty-three stars, for the beginning of the fictitious year 1896, or the moment when the sun's mean longitude is 280° .

The annual variations are to be considered as the differential coefficients of each co-ordinate with respect to the time at the beginning of the year.

In order that the list of mean places of stars may serve the purpose of a working-catalogue for the convenient use of astronomers, the position of each of the northern circumpolar stars is given in duplicate, one position being for the upper and the other for the lower culmination. The positions for the lower culmination are marked S. P. In this case, the right ascensions are the sidereal times at which the star crosses the lower meridian; and, in order to have the expressions for the co-ordinates congruous in all cases, the declinations are counted from the equator through the north pole, and therefore exceed 90° . The time of observation and the setting of the circle, in order to find a star on the meridian, are then obtained uniformly for all the stars.

Beginning with the volume of 1882, the number of stars has been greatly increased, in order to make the list more useful to field-astronomers. To show at a glance these additional stars, they are indicated in the list by an asterisk.

Pages 302—313 contain the apparent positions of the four north polar stars, α , δ and λ Ursæ Minoris, and 51 Cephei, for every upper transit at Washington. They include the terms depending on the moon's longitude. The mean solar time of transit is given in the column *Mean Solar Date*, in order that each transit above and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26th is to be found, and we wish to know whether it precedes or follows the upper transit of the same date. On page 302, we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But, the lower transit following that of July 1st (page 308), does not take place until July 2.3. Hence, the lower transit of July 1st precedes the upper one of the same date. A transit occurring very nearly at noon may also be identified without a computation to ascertain the actual mean date, by simply noting the tenth of a day in the column of *Mean Solar Date*.

Pages 314—364 contain, for every tenth upper transit at Washington, the apparent places of stars of the preceding list which are not marked with an asterisk. The mean solar

date in each left hand column gives the day and tenth of the transit; so that each intermediate transit may be readily identified. Along with each co-ordinate is given, in small type, the change for ten days. This quantity is to be regarded as the differential coefficient corresponding to the dates for which the star-places are given.

Pages 365—376 contain the apparent right ascensions of all stars marked with an asterisk in the list of mean places. The apparent right ascension of each star is given only for that part of the year when it may readily be observed on the meridian. In the case of circumpolar stars, the right ascensions for lower, as well as upper, transit are given.

Pages 377—384 contain the apparent right ascension, declination, and semidiameter of the sun, and the sidereal time, all for Washington mean noon. Adjoining columns give the seconds of right ascension and of declination for apparent noon, that is, for the moment of transit of the sun's centre over the meridian of Washington. The hours and minutes of right ascension, and the degrees and minutes of declination are the same for both mean and apparent noon. In case they would have differed, the minute which would have been numerically larger is diminished by one, and the seconds increased by sixty, so that there is always a correspondence between the two numbers. The hourly motions in right ascension and declination are given for the moment of mean noon, but may be regarded as having the same values for apparent noon.

The *Equation of Time for Apparent Noon* is the correction to be applied to apparent time in order to obtain mean time. It is, therefore, mean time minus apparent time. Each number as given is the mean time of transit of the sun's centre over the meridian of Washington, counted from the nearest noon. The use of all the quantities is substantially the same as in the *Ephemeris for the Meridian of Greenwich*.

Pages 385—392 contain the right ascension, declination, semidiameter, and parallax of the moon, at the moment of transit over the meridian of Washington. The mean time given in the second column is that of transit of the moon's centre over this meridian. The differences for one hour of longitude are the amounts by which the local mean times of transit over a meridian one hour west of Washington exceed those given in the column *Mean Time of Transit*, supposing the rate of change to be uniform and equal to what it is at the moment of transit over the meridian of Washington. The next four columns need no especial explanation, except that the differences for one hour of longitude are computed as if the motion of the moon in right ascension were uniform. By means of them, the position of the moon can be computed with astronomical accuracy at the moment of transit over any meridian not exceeding one hour in longitude from that of Washington, by taking account of second differences. With greater longitudes of the place, the accuracy of the result obtained in this way will diminish. The columns of sidereal time of semidiameter passing meridian, etc., do not seem to need any explanation, except that they all refer to the moment of transit. The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When two opposite limbs are both so nearly full that they can be well observed, both are indicated; and the one which is deficient is printed in smaller type. When the illumination is so nearly equal that no choice can be made between them, both are printed in large type.

Pages 393—410 contain the geocentric apparent right ascensions and declinations of the seven major planets, and their semidiameters and horizontal parallaxes, for the moments of all those transits over the meridian of Washington which can be observed.

PART III—PHENOMENA.

This portion of *The American Ephemeris and Nautical Almanac* gives the principal astronomical phenomena of the year, reduced to Washington mean time, except in the case of the eclipses and the data for the rings of Saturn, which are given in Greenwich mean time.

Pages 412—416 inclusive contain the elements necessary for computing the eclipses of the sun which occur during the year.

The eclipse-elements are given for the moment of conjunction of the sun and moon in right ascension. The subsequent tables and results are not, however, computed from these elements unchanged; but from the accurate positions of the two bodies as interpolated for each hour of the eclipse. The principal circumstances of each eclipse are as follows:—

On the line "Eclipse begins" is given the Greenwich mean time at which the earth first touches the moon's penumbra, and the longitude and latitude of the point of touching.

The "Central eclipse begins" when the axis of the moon's shadow first touches the earth, and the longitude and latitude of the point of touching follow.

"Central eclipse at noon" indicates the moment when the axis of the shadow is coincident with the plane of the meridian at the point of its intersection with the earth's surface. To the observer at this point the eclipse will be central at the moment of apparent noon.

"Central eclipse ends" and "Eclipse ends" have the converse meaning of the beginning.

Maps of the Eclipses.—The regions in which each eclipse is visible, are shown upon the maps given in connection with them. From these maps may also be derived the approximate determination of the times of beginning and ending, and of the magnitude of the eclipses at any place. The dotted curves show the outlines of the shadow for each hour of Greenwich mean time and therefore pass through all the places where the eclipse begins or ends at that hour. To find at what hour the eclipse begins at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between these two hours of Greenwich mean time: the fraction of the hour may be determined by dividing the hour proportionally to the space which it represents on the map. This division may be a little more exact by allowing for the changes in this space as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the time at which the eclipse of 1896, August 8, begins and ends at Tokio.

For the beginning we compare the distance of the place from the curves of 16^h and 17^h and we find it to correspond to about 35 minutes from the former, therefore the time of beginning is approximately 16^h 35^m; for the end we compare the distance of the place from the curves of 18^h and 19^h and find it to be about 5 minutes from the latter, therefore the approximate time of end is 18^h 55^m, both of which are probably correct to within 2 or 3 minutes. Changing to local mean time the result will be:—

		<i>Beginning.</i>			<i>Ending.</i>		
		d	h	m	h	m	
Greenwich mean time	Aug.	8	16	35	18	55	
Longitude east			9	19	9	19	
Local mean time	Aug.	9	1	54	Aug. 9	4	14

In the case of total and annular eclipses, a rough estimate of the magnitude of the eclipse may be obtained from the position of the place relatively to the central line and to the limit. On the central line, the eclipse is annular or total, while on the limit, the limb of the moon only grazes that of the sun.

More Accurate Computations.—A more accurate determination of the phases as visible at any point of the earth's surface may be obtained from the Besselian elements which are given for every ten minutes of Greenwich mean time. Their geometric signification is as follows:—

Let us imagine a plane passing through the centre of the earth, perpendicular to the right line joining the centres of the sun and moon. This latter line is the axis of the moon's shadow, and the plane is called the *fundamental plane*. We take the intersection of this plane with that of the earth's equator as the axis of *X*, and the centre of the earth as the origin of co-ordinates. The axis of *Y* is perpendicular to that of *X*, and directed toward the north; *x* and *y* are then the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane. The angle *d*, of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the

shadow is directed; this direction being that from the earth toward the moon and sun. The angle μ is the Greenwich hour-angle of this same point of the celestial sphere.

The quantities l and l' are the radii of the shadow-cones upon the fundamental plane, l corresponding to the penumbra, and l' to the umbra, or annulus. The notation is that of CHAUVENET'S *Spherical and Practical Astronomy*, in which l' is regarded as positive for an annular, and negative for a total eclipse.

The angles f and f' , the tangents of which are given, are the angles which the elements of the respective shadow-cones make with the axis of the shadow; or, they are the semi-angles of the two cones.

At the bottom of the table are given the logarithms of the change of x , y and μ , in one minute, in order to facilitate the interpolation to any required moment.

The method of computing the eclipse from the given elements is as follows: It is premised that the moments of beginning and ending are those at which the distance of the observer from the axis of the shadow or penumbra is equal to the radius of the latter at the point of observation. To find such distance and radius we compute—

(1) The co-ordinates, ξ , η and ζ , of the observer, at some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase, together with their variations for one minute.

(2) The co-ordinates x and y of the axis of the shadow at the same moment, which, with their variations for one minute, are taken from the tables of elements.

(3) Hence, the position and motion of the observer relative to the axis of the shadow.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follow:—

(1) Find the geocentric co-ordinates of the station referred to the earth's equator, which are represented by $\rho \cos \varphi'$ and $\rho \sin \varphi'$, ρ being the distance from the centre of the earth, and φ' the geocentric latitude. These may be obtained from geodetic tables, or may be computed from the following table by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Co-ordinates of a Place.

φ	Log F .	Log G .
0°	0.00000	0.00295
5	0.00001	0.00294
10	0.00004	0.00291
15	0.00010	0.00285
20	0.00017	0.00278
25	0.00026	0.00269
30	0.00037	0.00258
35	0.00048	0.00247
40	0.00061	0.00234
45	0.00074	0.00221
50	0.00086	0.00209
55	0.00099	0.00196
60	0.00111	0.00184
65	0.00121	0.00174
70	0.00130	0.00165
75	0.00138	0.00157
80	0.00143	0.00152
85	0.00146	0.00149
90	0.00147	0.00147

For the assumed Greenwich mean time of computation, take from the table of elements the values of $\sin d$, $\cos d$, and μ . Put:

λ , the longitude west from Greenwich. The co-ordinates of the observer will then be:—

$$\xi = \rho \cos \varphi' \sin (\mu - \lambda)$$

$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda)$$

$$\zeta = \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda)$$

and their variations in one minute of mean time will be:—

$$\xi' = [7.63992] \rho \cos \varphi' \cos (\mu - \lambda)$$

$$\eta' = [7.63992] \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992] \xi \sin d$$

ζ' is not wanted.

(2) The co-ordinates x and y of the axis of the shadow are taken from the tables of elements for the same assumed moment of Greenwich mean time, together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. The variations for one minute we represent by x' and y' . Their logarithms are given at the foot of the tables.

(3) The distance m and position-angle M of the axis of the shadow relative to the observer, and the relative motions, n and N , are computed by the formulæ:—

$$m \sin M = x - \xi$$

$$m \cos M = y - \eta$$

$$n \sin N = x' - \xi'$$

$$n \cos N = y' - \eta'$$

(4) The radius L of the shadow or penumbra at the distance ζ from the fundamental plane is computed by the formula

$$L = l - \zeta \tan f$$

l and f being found in the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or end of the eclipse, we shall have—

$$m = L$$

But, as this condition can scarcely ever be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ψ from the equation,

$$\sin \psi = \frac{m \sin (M - N)}{L}$$

There will be two values to this angle, of which one will be in the first and the other in the second quadrant when $\sin \psi$ is positive, and one in the third and the other in the fourth when $\sin \psi$ is negative. But, simplicity will be gained by taking only that value of ψ for which $\cos \psi$ is positive. This value lies between the limits $+90^\circ$ and -90° . The correction τ to the assumed time will be found in minutes, from—

For beginning:

$$\tau = - \frac{m \cos (M - N)}{n} - \frac{L \cos \psi}{n}$$

For ending:

$$\tau = - \frac{m \cos (M - N)}{n} + \frac{L \cos \psi}{n}$$

One such pair of values of τ cannot, however, give the times of both beginning and ending with accuracy. To attain accuracy we must, in commencing the computation, assume two times, one near that of beginning, and another near that of ending. These approximate times may be derived from the chart of the eclipse. The computation for the first assumed time will give a small value of τ which, applied to the assumed time, will give a nearly correct time for the beginning of the eclipse, and a large value which, added to the assumed time, will give an inaccurate time of ending. The computation for the second assumed time will give a small and nearly correct value of τ , to be applied to the assumed time for the end, a large negative and inaccurate one to be subtracted for the beginning. We shall thus have two times of each phase, only one of which is to be considered approximately correct

The more accurate times of beginning and ending may now be taken in place of the first assumed ones, and the computation may be repeated from the beginning, leading to a pair of values of τ , which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors. The following theorem will, however, enable us to obtain a second approximation to the true times of each phase without repeating the computation.

THEOREM.—*The error of each result is approximately proportional to the square of the correction τ , multiplied by the sine of the sun's hour-angle, $(\mu-\lambda)$, for the middle of the interval between the time of computation and that of the phase.*

To apply this theorem we find the two values of $\tau^2 \sin (\mu-\lambda)$ corresponding to the required phase. We then find the ratio of these quantities—which will commonly be a large number, and divide the difference of the results by this ratio. The quotient will be a correction to be applied to the more accurate result in such a way as to make it deviate yet more from the less accurate one. This correction should be positive in the local forenoon, and negative in the afternoon, and its value should never materially exceed $0^m.001 \tau^2$.

Unless the times chosen for computation are unusually in error, say ten minutes or more, the corrected results thus obtained will be theoretically correct within less than a second. But to guard against numerical errors it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, further corrections and computations may be made by the computer according to his own judgment.

It may be remarked that the uncertainty of the ephemerides is such that a prediction may be several seconds in error from this unavoidable cause alone.

Position-angle of Point of Contact.—The position-angle P , of the point of contact, reckoned from the north point of the sun's limb toward the east, is found by the formula

$$\text{For beginning :} \quad P = N - \psi \pm 180^\circ$$

$$\text{For end :} \quad P = N + \psi$$

it being assumed that, in each case, the value of ψ is taken between the limits $\pm 90^\circ$.

Computation of the Solar Eclipse of 1896, Aug. 8, for Akishi, Japan, whose position is—

$$\text{Latitude, } \varphi = + 43^\circ 2' 22''$$

$$\text{Longitude, } \lambda = - 144^\circ 51' 50''$$

Constants for the given place :—

$$\rho \sin \varphi' = 9.83180$$

$$\rho \cos \varphi' = 9.86450$$

From the Eclipse Charts we find the approximate times of the phases to be—

Beginning August	8 ^d 16 ^h 30 ^m	} Greenwich Mean Time.
Total Phase	17 40	
Ending	18 45	

Greenwich Mean Time,	August	Beginning.	Total Phase.	Ending.
		8 ^d 16 ^h 30 ^m	17 ^h 40 ^m	18 ^h 45 ^m
	μ	246 11 0	263 41 12	279 56 24
	λ	-144 51 50	-144 51 50	-144 51 50
	$\mu - \lambda$	31 2 50	48 33 2	64 48 14
	$\rho \cos \varphi'$	9.86450	9.86450	9.86450
	$\sin (\mu - \lambda)$	9.71243	9.87479	9.95658
	$\log \xi$	9.57693	9.73929	9.82108
	ξ	+ 0.37751	+ 0.54864	+ 0.66234

Greenwich Mean Time,	August	Beginning. 8 ^d 16 ^h 30 ^m	Total Phase. 17 ^h 40 ^m	Ending. 18 ^h 45 ^m
	$\rho \sin \varphi'$	9.83180	9.83180	9.83180
	$\cos d$	9.98340	9.98343	9.98346
		9.81520	9.81523	9.81526
	(1) +	0.65343	+ 0.65347	+ 0.65351
	$\rho \cos \varphi'$	9.86450	9.86450	9.86450
	$\sin d$	9.43339	9.43303	9.43270
	$\cos (\mu - \lambda)$	9.93285	9.82083	9.62912
		9.23074	9.11836	8.92632
	(2) +	0.17011	+ 0.13133	+ 0.08440
(1) — (2)	η	+ 0.48332	+ 0.52214	+ 0.56911
	$\rho \sin \varphi' \sin d$	9.26519	9.26483	9.26450
	(3) +	0.18416	+ 0.18401	+ 0.18387
	$\rho \cos \varphi' \cos d \cos (\mu - \lambda)$	9.78075	9.66876	9.47708
	(4) +	0.60360	+ 0.46640	+ 0.29997
(3) + (4)	ζ	+ 0.78776	+ 0.65041	+ 0.48384
	const. log	7.63992	7.63992	7.63992
	$\rho \cos \varphi' \cos (\mu - \lambda)$	9.79735	9.68533	9.49362
	$\log \xi'$	7.43727	7.32525	7.13354
	ξ'	+ 0.002737	+ 0.002115	+ 0.001360
	const. log	7.63992	7.63992	7.63992
	$\xi \sin d$	9.01032	9.17232	9.25378
	$\log \eta'$	6.65024	6.81224	6.89370
	η'	+ 0.000447	+ 0.000649	+ 0.000783
	$x - \xi$	— 0.44089	— 0.00646	+ 0.44205
	$y - \eta$	+ 0.30125	+ 0.00221	— 0.28671
	$x' - \xi'$	+ 0.005915	+ 0.006536	+ 0.007288
	$y' - \eta'$	— 0.004162	— 0.004369	— 0.004508
	$m \sin M$	9.64433 <i>n</i>	7.81023 <i>n</i>	9.64547
	$m \cos M$	9.47893	7.34439	9.45744 <i>n</i>
	$\tan M$	0.16540 <i>n</i>	0.46584 <i>n</i>	0.18803 <i>n</i>
	M	304° 20' 40"	288° 53' 10"	122° 58' 2"
	$\cos M$	9.75141	9.51013	9.73573 <i>n</i>
	$\log m$	9.72752	7.83426	9.72171
	$n \sin N$	7.77195	7.81531	7.86261
	$n \cos N$	7.61930 <i>n</i>	7.64038 <i>n</i>	7.65398 <i>n</i>
	$\tan N$	0.15265 <i>n</i>	0.17493 <i>n</i>	0.20863 <i>n</i>
	N	125° 7' 53"	123° 45' 39"	121° 44' 19"
	$\cos N$	9.76001 <i>n</i>	9.74486 <i>n</i>	9.72103 <i>n</i>
	$\log n$	7.85929	7.89552	7.93295
	$\tan f$	7.66407	7.66191	7.66408
	$\log \zeta$	9.89639	9.81319	9.68470
		7.56046	7.47510	7.34878
	$\zeta \tan f$	+ 0.00363	+ 0.00299	+ 0.00223
	l	+ 0.53901	— 0.00698	+ 0.53876
	L	+ 0.53538	— 0.00997	+ 0.53653

Greenwich Mean Time,	August	Beginning. 8 ^d 16 ^h 30 ^m	Total Phase. 17 ^h 40 ^m	Ending. 18 ^h 45 ^m
		° ' "	° ' "	° ' "
$M - N$		179 12 47	165 7 31	1 13 43
$\sin (M - N)$		8.13781	9.40944	8.33126
$\log m$		9.72752	7.83426	9.72171
$\text{colog } L$		0.27134	2.00130 <i>n</i>	0.27041
$\sin \psi$		8.13667	9.24500 <i>n</i>	8.32338
ϕ		0 47 6	— 10 7 30	1 12 23
$\log \frac{m}{n}$		1.86823	9.93874	1.78876
$\cos (M - N)$		9.99996 <i>n</i>	9.98520 <i>n</i>	9.99990
		1.86819 <i>n</i>	9.92394 <i>n</i>	1.78866
$-\frac{m}{n} \cos (M - N)$		+73.823	+ 0.839	—61.470
$\log L$		9.72866	7.99870 <i>n</i>	9.72959
$\cos \psi$		9.99996	9.99318	9.99990
$\text{colog } n$		2.14071	2.10448	2.06705
		1.86933	0.09636 <i>n</i>	1.79654
$\frac{L \cos \psi}{n}$		±74.017	± 1.248	± 62.596
		^m	^m	^m
τ		— 0.194	— 0.409 + 2.087	+ 1.126
T		^h ^m 16 30	^h ^m 17 40	^h ^m 18 45
		^d ^h ^m	^h ^m	^h ^m
t Aug. 8	16 29.806		17 39.591	18 46.126
			17 42.087	
λ	— 9 39.456	— 9 39.456	— 9 39.456	— 9 39.456
	^d ^h ^m	^d ^h ^m	^d ^h ^m	^d ^h ^m
Local Mean Time,	August 9 2 9.262	Aug. 9 3 19.047	Aug. 9 3 21.543	Aug. 9 4 25.582
Duration of Totality,		^m 2.496		

No correction is necessary since the assumed times differ very little from the computed ones.

Therefore we have

Beginning of the eclipse,	August	^d ^h ^m ^s 9 2 9 15.7	} Local Mean Time.
Beginning of total eclipse,	"	9 3 19 2.8	
End of total eclipse,	"	9 3 21 32.6	
End of the eclipse,	"	9 4 25 34.9	

Angle of position:

	Beginning.	Ending.
N	125 7.9	121 44.3
$\psi (+ 180)$	180 47.1	1 12.4
P	304 20.8	122 56.7

from the north point of the sun's disk towards the east for direct image.

Elements of Occultations.—Pages 418—451 give the elements for the prediction of the times of occultation of stars and planets by the moon. In the columns referring to the star, those headed *Red'ns from 1896.0* give the quantities necessary to reduce the mean place of the star at the beginning of 1896 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

The quantities in the following five columns are all given for the moment of geocentric conjunction of the star and moon in right ascension. Let there be a line passing from the star through the centre of the moon, and let a plane perpendicular to this line pass through the centre of the earth: this plane will be the fundamental plane for the occultation. The system of co-ordinates is similar to that already described for eclipses. The cone circumscribing the moon and star may be regarded as a cylinder having everywhere the same diameter as the moon. This cylinder will intercept the fundamental plane in a circle of which the linear diameter will be the same as that of the moon.

The *Washington Mean Time* is the moment at which the two bodies are in geocentric conjunction in right ascension. At this moment the co-ordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour-Angle H* gives the common geocentric hour-angle of the moon and star at the same moment, counted from the meridian of Washington—positive toward the west and negative toward the east. Column Y gives the co-ordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the hourly variation of x and y . The linear unit in these columns is the earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the Washington mean time of immersion and emersion of a star behind the limb of the moon may be computed for any part of the earth by a method nearly the same as that already explained for computing eclipses, only more simple.

We shall first show how to compute an isolated occultation for a particular place, assuming it to be visible at that place, and then show how all the occultations which will be visible at a place may be selected and computed by a more rapid process.

(1) The geocentric co-ordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed with three or four places of decimals by the formulæ,

$$\begin{aligned}\rho \sin \varphi' &= \frac{\sin \varphi}{G} \\ \rho \cos \varphi' &= F \cos \varphi\end{aligned}$$

already given in connection with eclipses.

As in the case of eclipses, it is necessary to have an approximate time of the phenomenon, corresponding to that obtained from the charts of the eclipses. The quantity H being the Washington west hour-angle of the two bodies at the moment of geocentric conjunction, $H - \lambda$ will be the local hour-angle of the star at this same moment. Let us call this angle h_0 , putting

$$h_0 = H - \lambda$$

where λ is the longitude west of *Washington*.

The next step will then be to find the approximate moment of apparent conjunction in right ascension as seen from the place. An approximate correction to reduce the time and hour-angle for geocentric conjunction to those for apparent conjunction may be taken from Mr. DOWNES's table, on pages 454—455. This correction will have the same sign as h_0 .

When this table is not available, the correction may be computed thus: Compute the quantities ξ_0 , ξ' and τ from the formulæ,

$$\begin{aligned}\xi_0 &= \rho \cos \varphi' \sin h_0 \\ \xi' &= [9.4192] \cos (h_0 + \frac{1}{2} h_0) \\ \tau &= \frac{\xi_0}{x' - \xi'}\end{aligned}$$

τ will then be the approximate interval between the times of geocentric and local conjunction. By applying it to the Washington mean time of the former, as given with the elements, we shall have the Washington mean time of the latter within a few minutes.

The average duration of an occultation is about an hour. Thence, by adding $0^h.5$ to and subtracting it from the mean time of apparent conjunction, we shall have approximate times of the phases of immersion and emersion for farther computation. Let us then put,

$$\tau_1 = \tau - 0^h.5$$

$$\tau_2 = \tau + 0^h.5$$

T , the Washington mean time of geocentric conjunction in R. A.

d , the declination of the star.

(2) Compute for the moments $T + \tau_1$ and $T + \tau_2$ the following quantities, in which we write τ for each of the quantities τ_1 and τ_2 . The latter, when used as angles, are to be changed to arc by multiplying by 15, and the minutes are to be further increased by one-sixth the number of degrees in order to reduce to the sidereal hour-angle.

$$\xi = \rho \cos \varphi' \sin (h_0 + \tau)$$

$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (h_0 + \tau)$$

$$\xi' = [9.41916] \rho \cos \varphi' \cos (h_0 + \tau)$$

$$\eta' = [9.41916] \rho \cos \varphi' \sin d \sin (h_0 + \tau) = [9.41916] \xi \sin d$$

$$x = x' \tau$$

$$y = Y + y' \tau$$

Compute m , M , n and N from the equations

$$m \sin M = x - \xi$$

$$m \cos M = y - \eta$$

$$n \sin N = x' - \xi'$$

$$n \cos N = y' - \eta'$$

$$n' = \frac{n}{60} = [8.22185] n$$

$$\sin \psi = [0.56500] m \sin (M - N)$$

Then, t_1 and t_2 from the equations

$$t_1 = -\frac{m}{n'} \cos (M - N) - \frac{[9.43500]}{n'} \cos \psi \quad (\text{Beginning.})$$

$$t_2 = -\frac{m}{n'} \cos (M - N) + \frac{[9.43500]}{n'} \cos \psi \quad (\text{End.})$$

The quantities t_1 and t_2 will then be the corrections in minutes to be applied to the respective times $T + \tau_1$ and $T + \tau_2$ to obtain the Washington mean times of the phases.

As in the case of eclipses, the small value of t_1 will give an accurate result for one phase, and the large value an inaccurate result for the other. Both accurate results may then be corrected by comparison with the inaccurate one, in the way described for eclipses, and a result obtained which will probably be correct within a fraction of a minute of time.

As a check upon the result, it will be advisable to compute ξ , η , x and y for the moments finally obtained. If the times are correct these quantities will fulfil the condition,

$$\sqrt{(\bar{x} - \bar{\xi})^2 + (\bar{y} - \bar{\eta})^2} = 0.27227$$

If $\log m \sin (M - N) = 9.43500$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\sin \psi < 1$, or $\sin \psi > 1$. In the latter case, the impossible value of $\sin \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the ephemerides of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 90^\circ$, or 270° , according as $\sin (M - N)$ is positive or negative; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M - N)}{n'}$$

Putting π for the moon's horizontal parallax, the distance from the moon's limb will be,

$$\pi [m \sin (M - N) - 0.27227]$$

disregarding the sign of $\sin (M - N)$; or, allowing for the augmentation of the semidiameter,

$$\pi [m \sin (M - N) - 0.27227] [1 + z \sin \pi]$$

where

$$z = \rho \cos \varphi' \cos d \cos (h_0 + \tau) + \rho \sin \varphi' \sin d$$

The position-angle P , of the line from the moon's centre to the star at the times of contact, reckoned from the north point toward the east, is given by the formulæ:—

$$P = N - \psi \quad \text{for immersion,}$$

$$P = N + \psi \pm 180^\circ \quad \text{for emersion,}$$

it being supposed that the value of ψ , in each case, is taken between the limits $\pm 90^\circ$.

To find the angle from the vertex, we compute the angle C from the formula,

$$\tan C = \frac{\xi + t \xi'}{\eta + t \eta'}$$

in which the value of t corresponding to the phase is to be used. Then

$$V = P - C$$

is the angle from the vertex, also reckoned from the north toward the east.

As an example of an isolated occultation, we will compute that of 13 Piscium, on Sept. 20, 1896, for Mount Hamilton, whose position is

$$\varphi = + 37^\circ 20' 23''.5$$

$$\lambda = + 2^h 58^m 22^s.05$$

Constants for the given place,

$$\rho \sin \varphi' = 9.78045$$

$$\rho \cos \varphi' = 9.90094$$

From the elements on page 441, we have

$$H = + 3^h 19.3^m$$

$$h_0 = H - \lambda = + 0^h 20.932^m$$

From DOWNES'S Table, pages 454 and 455, or from the formulæ on page 514, we find the correction to the Washington mean time of geocentric conjunction to be about $+ 15^m$, therefore the Washington mean time of apparent conjunction at the given place is Sept. 20^d 14^h 58^m.2; adding and subtracting 30^m, we shall have the approximate Washington mean times of immersion and emersion to be used in the computation, thus:

$$\tau_1 = - 0^h 15^m$$

$$\tau_2 = + 0^h 45^m$$

$$T + \tau_1 = \text{Sept. } 20^d 14^h 28^m.2$$

$$T + \tau_2 = \quad \quad 20^d 15^h 28^m.2$$

Washington Mean Time,	September	Immersion.	Emersion.
		20 ^d 14 ^h 28 ^m .2	15 ^h 28 ^m .2
	h_0	$+ 0^h 20.932^m$	$+ 0^h 20.932^m$
	τ (in sidereal time)	$- 0^h 15.041^m$	$+ 0^h 45.123^m$
	$h_0 + \tau$ (in arc)	$+ 1^\circ 28' 22''$	$+ 16^\circ 30' 49''$
	$\rho \cos \varphi'$	9.90094	9.90094
	$\sin (h_0 + \tau)$	8.40997	9.45369
	$\log \xi$	8.31091	9.35463
	ξ	$+ 0.02046$	$+ 0.22627$

Washington Mean Time,	September	Immersion. 20 ^d 14 ^h 28 ^m .2	Emersion. 15 ^h 28 ^m .2
	$\rho \sin \varphi'$	9.78045	9.78045
	$\cos d$	9.99982	9.99982
		9.78027	9.78027
	(1)	+ 0.60293	+ 0.60293
	$\rho \cos \varphi'$	9.90094	9.90094
	$\sin d$	8.46010 <i>n</i>	8.46010 <i>n</i>
	$\cos (h_0 + \tau)$	9.99986	9.98171
		8.36090 <i>n</i>	8.34275 <i>n</i>
	(2)	- 0.02296	- 0.02202
(1)-(2)	η	+ 0.62589	+ 0.62495
	const. log	9.41916	9.41916
	$\rho \cos \varphi' \cos (h_0 + \tau)$	9.90080	9.88265
	$\log \xi'$	9.31996	9.30181
	ξ'	+ 0.20891	+ 0.20036
	const. log	9.41916	9.41916
	$\xi \sin d$	6.77101 <i>n</i>	7.81473 <i>n</i>
	$\log \eta'$	6.19017 <i>n</i>	7.23389 <i>n</i>
	η'	- 0.00015	- 0.00171
	$\log x'$	9.68878	9.68878
	$\log \tau$	9.39794 <i>n</i>	9.87506
	$\log x$	9.08672 <i>n</i>	9.56384
	x	- 0.12210	+ 0.36630
	$\log y'$	9.41095	9.41095
	$\log y' \tau$	8.80889 <i>n</i>	9.28601
	$y' \tau$	- 0.06440	+ 0.19320
	Y	+ 0.75310	+ 0.75310
	y	+ 0.68870	+ 0.94630
	$x - \xi$	- 0.14256	+ 0.14003
	$y - \eta$	+ 0.06281	+ 0.32135
	$x' - \xi'$	+ 0.27949	+ 0.28804
	$y' - \eta'$	+ 0.25775	+ 0.25931
	$m \sin M$	9.15400 <i>n</i>	9.14622
	$m \cos M$	8.79803	9.50698
	$\tan M$	0.35597 <i>n</i>	9.63924
	M	293° 46' 39"	23° 32' 43"
	$\sin M$	9.96148 <i>n</i>	9.60149
	$\log m$	9.19252	9.54473
	$n \sin N$	9.44637	9.45945
	$n \cos N$	9.41120	9.41382
	$\tan N$	0.03517	0.04563
	N	47° 19' 2"	48° 0' 16"
	$\sin N$	9.86635	9.87110
	$\log n$	9.58002	9.58835
	colog 60	8.22185	8.22185
	\log		7.81020

Washington Mean Time,	September	Immersion.	Emersion.
		20 ^d 14 ^h 28 ^m .2	15 ^h 28 ^m .2
	const. log	0.56500	0.56500
	log m	9.19252	9.54473
	$\sin (M - N)$	9.96226 n	9.61704 n
	$\sin \psi$	9.71978 n	9.72677 n
	ψ	--31° 38' 14"	--32° 12' 42"
	log $\frac{m}{n'}$	1.39065	1.73453
	$\cos (M - N)$	9.60139 n	9.95917
		0.99204 n	1.69370
	$-\frac{m}{n'} \cos (M - N)$	+ 9.818	-- 49.397
	const. log	9.43500	9.43500
	colog n'	2.19813	2.18980
	$\cos \psi$	9.93012	9.92741
		1.56325	1.55221
	$\frac{[9.43500] \cos \psi}{n'}$	-- 36.581	+ 35.663
	t	-- 26.763	-- 13.734
	T	Sept. 20 14 28.200	15 28.200
Washington Mean Time of Phase,	λ	Sept. 20 14 1.437	15 14.466
		2 58.368	2 58.368
Mount Hamilton Mean Time,		Sept. 20 11 3.069	12 16.098
Angle of position:			
	N	47 19.	48 0.3
	$\psi (+ 180^\circ)$	-- 31 38.2	-- 32 12.7
	P	78 57.2	195 47.6

from the north point of the moon's limb toward the east for direct image.

Prediction of Many Occultations for a Given Place.—When it is desired to predict all the occultations which will be visible at some one place, tables may be constructed and applied in such a way as to greatly diminish the labor of computation. In using such tables, the most convenient course will be to find for each occultation the hour-angle of the star at the moment of apparent conjunction in right ascension, as seen from the place of observation. The table of elements, pages 418—451, gives H , the Washington hour-angle at the moment of geocentric conjunction. The corresponding geocentric hour-angle at the place will be

$$h_0 = H - \lambda \quad (\lambda = \text{west longitude from Washington}).$$

The moment of apparent conjunction, as seen from the station, will be given by the condition $\xi = x$; or, using the values of ξ and x ,

$$\rho \cos \varphi' \sin h = x' \tau$$

h being the west hour-angle of the star at the moment in question, and τ the interval, in hours of mean time, which has elapsed since geocentric conjunction. We shall therefore have,

$$h = h_0 + \tau$$

for the hour-angle at the end of the interval τ after geocentric conjunction. In strictness, τ should here be multiplied by the factor $1 + \frac{1}{365.25}$, because the star moves a little more than 15° in an hour of mean time; but the error arising from the neglect of the factor is too small to be important, as it will affect the predicted time of conjunction by less than 10 seconds. The equation for finding τ is therefore,

$$\rho \cos \varphi' \sin (h_0 + \tau) = x' \tau$$

The quantities h_0 and x' being derived immediately from the data of the Ephemeris, the quantity τ is readily obtained by successive approximation, and may be tabulated as a function of h_0 and x' . The computation of τ is effected as follows. We have

$$\sin (h_0 + \tau) = \sin h_0 + 2 \sin \frac{1}{2} \tau \cos (h_0 + \frac{1}{2} \tau) \quad (1)$$

The value of τ in arc being seldom more than 24° we may put τ itself for $2 \sin \frac{1}{2} \tau$. The equation will then become

$$\rho \cos \varphi' \sin h_0 + \tau \rho \cos \varphi' \cos (h_0 + \frac{1}{2} \tau) = x' \tau$$

from which we find

$$\tau = \frac{\rho \cos \varphi' \sin h_0}{x' - \rho \cos \varphi' \cos (h_0 + \frac{1}{2} \tau)} \quad (2)$$

To tabulate τ , we must first have a table of the quantities

$$\begin{aligned} \xi &= \rho \cos \varphi' \sin h \\ \xi' &= [9.41916] \rho \cos \varphi' \cos h \end{aligned} \quad (3)$$

which table may be formed for every 10 minutes (in time) of h . If we then put ξ_0 for the value of ξ corresponding to $h = h_0$ and ξ'_1 for the value of ξ' corresponding to $h = h_0 + \frac{1}{2} \tau$, we shall have

$$\tau = \frac{\xi_0}{x' - \xi'_1} \quad (4)$$

Since we must know the value of τ , approximately, before we can take ξ'_1 from the table, this equation can be solved only by successive approximations. The approximations converge so rapidly as to offer no difficulty. It will be best to begin by comparing values of τ for the two extremes of x' , namely, $x' = 0.48$ and $x' = 0.60$, because the approximate values of τ can then be interpolated for all the intermediate values of x' . For the first approximation may be taken—

$$\begin{aligned} \frac{1}{2} \tau &= 50^m \sin \frac{4}{3} h_0 \quad (\text{for } x' = 0.48) \\ \frac{1}{2} \tau &= 40^m \sin \frac{4}{3} h_0 \quad (\text{for } x' = 0.60) \end{aligned} \quad (5)$$

or, the approximate values of τ may be taken from Mr. DOWNES's table, pages 454—455. It will be best to make the computation for every 30^m of h_0 , and to find the intermediate values of τ for every 10^m by interpolation. Then for each 30^m of h_0 we take ξ' from a table with the argument $h_0 + \frac{1}{2} \tau$, and $\log \xi$ with the argument h_0 , and thence compute τ by (4). If the value of τ thus arrived at differs more than 3^m from that employed in taking out ξ' , a new value may be used to correct ξ' , and the computation may be repeated. The values corresponding to $x' = 0.51$, $x' = 0.54$, and $x' = 0.57$, can then be computed with the single interpolation of approximate values of τ , and afterward the table can be extended by interpolation to every 0.01 of x' between $x' = 0.48$ and $x' = 0.60$. It will be best to compute τ in the first place to every 0.001 of an hour, and to drop the last figure in forming the definitive table. The table thus formed will be called *Table I*.

The values of η and η' may then be tabulated for every degree of the star's declination, and every 10^m of h . It is a mere question of convenience whether to compute the table for negative values of d , since by putting

$$\begin{aligned}\eta_1 &= \rho \sin \varphi' \cos d \\ \eta_2 &= -\rho \cos \varphi' \sin d \cos h\end{aligned}$$

η_1 may be given in a table of single entry; and taking η_2 from the table of double-entry for a positive d , we shall have

$$\eta = \eta_1 \pm \eta_2$$

the lower sign being used for a negative d . But the extension of the table for η to negative values of d is so readily made that it will probably be found better to do it, so as to save taking out η_1 and η_2 separately.

This table for η will be called *Table II*, and the corresponding one for η' with the same arguments *Table III*. The precepts for using the tables will then be as follow:—

From *Table I* with the arguments x' and $H - \lambda = \lambda_0$ take out the value of τ . It will be sufficient to use the nearest 0.01 of x' . τ will be of the same sign as λ_0 . Then, enter *Table II* with the arguments d (the star's declination) and $\lambda = \lambda_0 + \tau$, and take out the value of η . Form the quantity $r = 1 + \eta' \tau$, and $r = \eta$. If the latter quantity lies between the limits ± 0.28 , it is almost certain that there will be an occultation. If it falls without the limits ± 0.44 , it is almost certain that there will not be an occultation. A convenient rule to adopt will be

$$\begin{aligned}r' < 0.10, \text{ limits} &= \pm 0.29 \\ 0.10 < r' < 0.15, \text{ limits} &= \pm 0.30 \\ 0.15 < r' < 0.20, \text{ limits} &= \pm 0.31 \\ 0.20 < r' &\quad \text{limits} = \pm 0.33\end{aligned}$$

Here, only the absolute value of r' is to be considered, without respect to its algebraic sign.

If $r = \eta$ falls between the limits thus indicated, take the values of ξ' and η' from the appropriate tables and compute ξ , η and λ from the equations

$$\begin{aligned}\tau \sin \xi' &= \eta' - \eta \\ \tau \cos \xi' &= \xi' - \xi \\ \lambda &= (\tau - \eta) \cos \xi'\end{aligned}$$

If $\lambda > 0.54$ or $\lambda < -0.44$ there will be no occultation, though the moon may pass close to the star when $\lambda = 0$. If $\lambda < 0.273$, compute

$$\begin{aligned}\eta &= \frac{1}{2} (1 + \cos \xi') \quad \cos \xi' = \frac{1}{2} (1 + \xi'^2) \\ \eta &= 0.273 \cos \xi'\end{aligned}$$

Worked Example

$$\begin{aligned}\text{Star declination } d &= 23^\circ 26' \text{ N.} & \lambda &= 10^\circ 00' \text{ W.} \\ \text{Star hour angle } h &= 10^\circ 00' \text{ W.} & \lambda &= 10^\circ 00' \text{ W.}\end{aligned}$$

$$\begin{aligned}\text{Moon declination } d_2 &= 23^\circ 26' \text{ N.} & \lambda &= 10^\circ 00' \text{ W.} \\ \text{Moon hour angle } h_2 &= 10^\circ 00' \text{ W.} & \lambda &= 10^\circ 00' \text{ W.}\end{aligned}$$

The value of τ is found from *Table I* to be $\tau = 0.01$. The value of η is found from *Table II* to be $\eta = 0.01$. The value of η' is found from *Table III* to be $\eta' = 0.01$. The value of ξ' is found from *Table IV* to be $\xi' = 0.01$. The value of ξ is found from *Table V* to be $\xi = 0.01$. The value of λ is found from *Table VI* to be $\lambda = 0.01$.

The value of η is found from *Table II* to be $\eta = 0.01$. The value of η' is found from *Table III* to be $\eta' = 0.01$. The value of ξ' is found from *Table IV* to be $\xi' = 0.01$. The value of ξ is found from *Table V* to be $\xi = 0.01$. The value of λ is found from *Table VI* to be $\lambda = 0.01$.

2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semi-diurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east horizon, or an immersion in the west, when this difference is a few minutes less than an hour.

3. The sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the day time.

The most convenient course will be to write the value of $-\lambda$ on the bottom of a sheet of paper, and passing through the list of occultations, pause over each one for which condition (1) is fulfilled, and examine whether conditions (2) and (3) are fulfilled. If either fails, the computer passes on. Very often it will require some examination to find whether $H - \lambda$ or $T - \lambda$ falls within the limits; in these cases, the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

Phenomena of Planets and Satellites, pages 456—489.—These are, for the most part, sufficiently explained in the body of the work. The following additional explanations are added for completeness:—

Disks of Mercury and Venus, pages 456—457.—The angle θ , needed in reducing meridian observations, is the angle which the arc of the great circle from the planet to the sun, makes with the arc from the planet toward the west, reckoned in the direction west, north, east, south. This position-angle is reckoned from 0° to 360° , as in the measurement of double stars, the planet taking the place of the central star. But its measure is 90° greater than that of a double star.

We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Satellites and Disk of Mars, page 458.—This page gives the Washington mean time of the greatest eastern and western elongations, the position-angles, and the distance of the satellites from the centre of the planet during the month preceding and following opposition.

Satellites of Jupiter, pages 459—483.—The times of phenomena are explained at the foot of each page; the diagram is on page 459.

Phenomena, pages 490—491.—The conjunctions, quadratures, and oppositions of the planets with respect to the sun, give the hours when the longitude of each planet differs from that of the sun by 0° , 90° , or 180° .

The conjunctions of the moon and planets with each other are given in right ascension. The degrees and minutes to the right show the difference of declination at the moment of conjunction.

Latitude by Observed Altitude of Polaris.—Table IV replaces the Tables A, B, C, D, given as a *Supplement* to the volumes of the Ephemeris for 1874—1881, and is intended for use at sea and reconnaissance on land. It will furnish an approximate value of the latitude, the probable error of which, in so far as the table is concerned, will be a few tenths of a minute of arc.

The directions for using the table are adapted to a right ascension of Polaris equal to $1^h 21^m.1$. Somewhat greater accuracy may be insured by substituting the right ascension of Polaris at the date of observation, from pages 302—313 of this volume.

APPENDIX.

ON THE CONSTRUCTION OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC FOR 1896.

THE adopted constants of precession, nutation, and aberration are those of STRUVE and PETERS, namely:—

$$\begin{aligned}\text{Precession} &= 50''.2411 + 0''.0002268 t \\ \text{Nutation} &= 9''.2231 + 0''.000009 t \\ \text{Aberration} &= 20''.4451\end{aligned}$$

in which t is the number of years after 1800.0.

The obliquity of the ecliptic is that of HANSEN's *Tables du Soleil*, which is $0''.27$ greater than that of PETERS, given in the issues of this Ephemeris preceding that for 1882. A comparison of HANSEN's mean obliquity with that of PETERS and of LE VERRIER at different epochs is given in the following table:—

Epoch.	HANSEN.			PETERS.	LE VERRIER.	H.—P.	H.—L.
	°	'	"	"	"	"	"
1750	23	28	18.19	17.44	19.42	+ 0.75	— 1.23
1800	23	27	54.80	54.22	55.63	+ 0.58	— 0.83
1850	23	27	31.42	30.99	31.83	+ 0.43	— 0.41
1900	23	27	8.02	7.76	8.03	+ 0.26	— 0.01

The formulæ for reducing the places of the fixed stars, page 280, correspond to the *Star Tables of the American Ephemeris*, Washington, 1869.

The mean right ascensions of stars have been reduced to NEWCOMB's fundamental standard in the catalogue attached to the *Washington Observations for 1870*, Appendix II, with the following exceptions: The right ascensions of the 48 circumpolar stars north of 60° north declination are from Dr. GOULD's *Standard Places of Fundamental Stars*, second edition, United States Coast Survey Office, 1866. Of the twelve stars south of 50° south declination, the positions of β Hydri, α Trianguli Australis, and σ Octantis, have been corrected from data furnished by Dr. GOULD; while the remaining nine are, as before, from the *British Nautical Almanac* for 1848.

The right ascensions of the additional stars in the general list, whose apparent right ascensions are given in a subsequent section, have been taken partly from the *Catalogue of 1098 Standard Clock and Zodiacal Stars*, forming Part IV of Vol. I of *Astronomical Papers Prepared for the Use of the American Ephemeris and Nautical Almanac*, Washington, 1881; and partly from the catalogue of the Astronomische Gesellschaft of 1878. A few have been derived from recent catalogues without a rigorous reduction for equinox.

The mean declinations of stars are taken from BOSS's paper in the *Report of the Northern Boundary Commission*, Washington, 1879, for all stars found therein. The declinations of all the other stars have been reduced to the same standard, except those of the additional ones above, which have been taken partly from the Astronomische Gesellschaft list, and partly from places in recent catalogues. To the apparent places of Sirius and Procyon have been applied the periodic corrections resulting from AUWERS's investigations.

The values of these corrections are :—

Year.	Sirius.		Procyon.	
1896.0	$\Delta a = + 0.092$	$\Delta \delta = + 1.39$	$\Delta a = + 0.070$	$\Delta \delta = - 0.08$
1897.0	$\Delta a = + 0.068$	$\Delta \delta = + 1.44$	$\Delta a = + 0.068$	$\Delta \delta = - 0.24$

The ephemeris of the sun is constructed from HANSEN and OLUFSEN's *Tables du Soleil*, Copenhagen, 1853, except that STRUVE's aberration has been used. This is equivalent to adding $0''.19$ to the true longitudes, but it does not affect the right ascensions and declinations. The sun's rectangular equatorial co-ordinates have been computed from the longitudes and latitudes by the following formulæ :—

$$\begin{aligned} X &= R \cos \lambda \\ Y &= R \sin \lambda \cos \omega - 19.3 R \beta \\ Z &= R \sin \lambda \sin \omega + 44.5 R \beta \end{aligned}$$

The reductions to mean equinox, 1896.0, are computed by the formulæ,

$$\begin{aligned} \Delta X' &= + Y \sec \omega \Delta \lambda \sin 1'' \\ \Delta Y' &= - X \cos \omega \Delta \lambda \sin 1'' + Z \Delta \omega \sin 1'' - 9.4 \tau R \sin (\lambda + 187^\circ) \\ \Delta Z' &= - X \sin \omega \Delta \lambda \sin 1'' - Y \Delta \omega \sin 1'' + 21.7 \tau R \sin (\lambda + 187^\circ) \end{aligned}$$

Wherein—

λ and β are the longitude and latitude of the sun referred to the equinox and ecliptic of the date ;

ω , the obliquity of the ecliptic ;

$\Delta \lambda$, the reduction of longitude for precession and nutation from January 1.0 ;

$\Delta \omega$, the reduction of the mean to the apparent obliquity ;

τ , the fraction of the year since January 1.0.

The numerical coefficients are in units of the seventh place of decimals. The correction for latitude has been taken from GOETZE's paper in the *Astronomical Journal*, Vol. II, page 71.

The mean equatorial horizontal parallax of the sun, adopted from Professor NEWCOMB's *Investigation of the Distance of the Sun and the Elements which depend on it*,* is $8''.848$. The adopted semidiameter of the sun at the earth's mean distance is $16' 2''$. In the computations pertaining to eclipses, BESSEL's semidiameter, $15' 59''.788$ has been used.

The right ascension, declination and parallax of the moon are derived from HANSEN's *Tables de la Lune*, London, 1857, the mean longitude being corrected in accordance with NEWCOMB's *Researches on the Motion of the Moon*, Part I, page 268,† and a corrected table being substituted for Table XXXIV.

The semidiameter of the moon is computed from the moon's horizontal parallax by the formula,

$$S = 0.272274 \pi + 2''.5$$

The constant $2''.5$ is omitted in the computation of eclipses and occultations, as due entirely to telescopic and ocular irradiation.

The ephemeris of Mercury is derived from Professor WINLOCK's *Tables of Mercury*, Washington, 1864. They are based on the older theory of LE VERRIER, published in the *Additions to the Connaissance des Temps* for 1848.

The ephemeris of Venus is derived from Mr. G. W. HILL's *Tables of Venus*, Washington, 1872.

The ephemeris of Mars is derived from manuscript tables constructed from LINDENAU's Tables. Mr. HUGH BREEN's results, contained in his paper *On the Corrections of LINDENAU's Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX, have also been discussed and applied; and LE VERRIER's secular variations of the elements are

* *Astronomical Observations made at the U. S. Naval Observatory, Washington, 1865, Appendix II.*

† *Astronomical Observations made at the U. S. Naval Observatory, Washington, 1875, Appendix II.*

likewise adopted. The perturbations produced by Jupiter have been numerically increased by $\frac{1}{80}$ of their value. The following are the corresponding corrected elements and annual variations for Washington, 1855.0:—

$$\begin{aligned} L &= 320^{\circ} 13' 33.87'' + 689101.1527 \text{ } t \\ \pi &= 333^{\circ} 23' 17.84'' + 65.9990 \text{ } t \\ \Omega &= 48^{\circ} 25' 55.29'' + 27.6997 \text{ } t \\ i &= 1^{\circ} 51' 2.20'' - 0.02141 \text{ } t \\ e &= 19238''.75 + 0.18549 \text{ } t \\ n &= 689050''.8927 \\ a &= 1.5236915 \end{aligned}$$

The ephemeris of Jupiter is derived from manuscript tables constructed from BOUVARD'S Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The ephemeris of Saturn is derived from a provisional theory constructed by Mr. GEORGE W. HILL, and still unpublished.

The ephemerides of Uranus and Neptune are derived from Professor NEWCOMB'S Tables, published by the *Smithsonian Institution*.

The semidiameters of the planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	3.34	0.00	LE VERRIER, <i>Theory of Mercury</i> .
Venus	8.546 \pm 0.086	0.00	PEIRCE, from the Washington Observations of 1845 and 1846, made with the Mural Circle.
Mars	2.842 \pm 0.057	0.25	
Jupiter (polar)	18.78 \pm 0.067	0.70	
Saturn (polar)	8.77 \pm 0.039	0.95	
Uranus	1.68 \pm 0.3	1.30	
Neptune	1.28	1.48	
Jupiter (equatorial)	20.00	0.70	
Saturn (equatorial)	9.38	0.95	

The elements of eclipses of the sun and occultations of stars by the moon are given in accordance with BESSEL'S method, using the special forms in CHAUVENET'S *Spherical and Practical Astronomy*. The constants adopted for the eclipses are:—

Sun's mean equatorial horizontal parallax	8.800
Semidiameter of the sun at distance unity, BESSEL . . .	959.788
Ratio of radius of moon to radius of earth, BURCKHARDT . .	0.27227

The eclipses of Jupiter's satellites are computed from TODD'S *Continuation of DAMOISEAU'S Tables*, Washington, 1876. The occultations, transits, etc., are computed from WOOLHOUSE'S Tables, *British Nautical Almanac* for 1835, Table II of each satellite having been adapted to DAMOISEAU'S Tables.

The elongations and conjunctions of the satellites of Saturn are computed from manuscript tables prepared by Professor NEWCOMB.

The apparent elements of the rings of Saturn are computed from BESSEL'S data, except those for the dusky ring.

The elongations of the satellites of Uranus, and of the satellite of Neptune are computed from the data of Professor NEWCOMB'S *Uranian and Neptunian Systems*, Washington, 1875.

In compiling the positions of observatories, the latest available data have been used. The positions have been furnished, in many instances, through the courtesy of the directors of the Observatories, in response to a circular issued by the Superintendent of the American Ephemeris.

The reduction to geocentric latitude, and the logarithm of the radius of the earth, are derived from CLARKE'S elements of the terrestrial spheroid, as adopted by the U. S. Coast and Geodetic Survey.

$$\log e = 8.9152503$$

$$\varphi' - \varphi = -11' 40''.43 \sin 2 \varphi + 1''.19 \sin 4 \varphi$$

$$\log \rho = 9.9992645 + 0.0007374 \cos 2 \varphi - 0.0000019 \cos 4 \varphi$$

Table IV, for finding the latitude from an observed altitude of Polaris, is constructed for—

- (1) An altitude of Polaris equal to 45° .
- (2) A declination of Polaris equal to $+88^\circ 45'.4$.

The principal computations of the Ephemeris have been distributed in the following manner:—

The ephemeris of the Sun was computed by Mrs. E. B. DAVIS; the Moon's longitude, latitude, semidiameter and horizontal parallax, by Professor KEITH; the right ascension and declination, by Professor VAN VLECK; the culminations, by Professor W. W. HENDRICKSON; the lunar distances, by Mr. BRADFORD; Mercury and Venus, by Mr. E. P. AUSTIN; Mars, Jupiter, Saturn, Uranus, and Neptune, by Mr. ROBERDEAU BUCHANAN; Jupiter's satellites, by Professor H. D. TODD; the satellites of Saturn, Uranus, and Neptune, by Dr. MORRISON. The mean and apparent places of the fixed stars were prepared by Mr. HEDRICK and Mr. MEIER; the general constants for their reduction, by Mr. BUCHANAN; the occultations, by Mr. AUHAGEN; and the eclipses were computed and the charts projected by Mr. BUCHANAN.

**CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S
MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING
TO A CORRECTED LUNAR DISTANCE.**

Approximate Interval.		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																											
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52		
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
o o	3 o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
o 10	2 50	o	o	o	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3
o 20	2 40	o	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	6	6
o 30	2 30	o	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9	9	9
o 40	2 20	o	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11	11	11
o 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	13	13
1 o	2 o	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16	16	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	17
		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																											
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100				
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
o o	3 o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
o 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	7
o 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	12	12	12
o 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	17	17	17	17
o 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	21	22	22	22	22
o 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	24	25	25	25	25
1 o	2 o	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28	28	28	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	29	30	30	30	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31	31	31	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	31	31	31	31
		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																											
		102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138									
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
o o	3 o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
o 10	2 50	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9
o 20	2 40	13	13	13	13	14	14	14	14	15	15	15	15	15	15	15	16	16	16	16	16	16	17	17	17	17	17	17	17
o 30	2 30	18	18	18	19	19	19	20	20	20	21	21	21	21	22	22	22	23	23	23	23	24	24	24	24	24	24	24	24
o 40	2 20	22	22	23	23	24	24	25	25	25	26	26	27	27	27	28	28	28	29	29	29	29	30	30	30	30	30	30	30
o 50	2 10	26	26	26	27	27	28	29	29	29	30	30	31	31	31	32	32	33	33	33	33	34	34	34	34	34	34	34	34
1 o	2 o	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	36	37	37	37	37	38	38	38	38	38	38	38	38
1 10	1 50	30	31	31	32	32	33	34	34	35	35	36	36	37	37	38	38	39	39	39	39	40	40	40	40	40	40	40	40
1 20	1 40	31	32	33	33	34	34	35	35	36	37	37	38	38	39	39	40	40	41	41	41	41	42	42	42	42	42	42	42
1 30	1 30	32	32	33	34	34	35	35	36	36	37	38	38	39	39	40	40	41	42	42	42	42	43	43	43	43	43	43	43

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.										
Side- real.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807	0	0.000
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1	0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2	0.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3	0.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4	0.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5	0.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6	0.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	0 1.124	1 9.954	7	0.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	0 1.288	1 10.118	8	0.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	0 1.452	1 10.281	9	0.025
10	0 1.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	0 1.616	1 10.445	10	0.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	0 1.779	1 10.609	11	0.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	0 1.943	1 10.773	12	0.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	0 1.107	1 10.937	13	0.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	0 1.271	1 11.100	14	0.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	0 1.435	1 11.264	15	0.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	0 1.599	1 11.428	16	0.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	0 1.762	1 11.592	17	0.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	0 1.926	1 11.756	18	0.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	0 2.090	1 11.920	19	0.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	0 2.254	1 12.083	20	0.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	0 2.418	1 12.247	21	0.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	0 2.582	1 12.411	22	0.060
23	0 3.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	0 2.745	1 12.575	23	0.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	0 2.909	1 12.739	24	0.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	0 3.073	1 12.903	25	0.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	0 3.237	1 13.066	26	0.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	0 3.401	1 13.230	27	0.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	0 3.564	1 13.394	28	0.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	0 3.728	1 13.558	29	0.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	0 3.892	1 13.722	30	0.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	0 4.056	1 13.886	31	0.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	0 4.220	1 14.049	32	0.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	0 4.384	1 14.213	33	0.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	0 4.547	1 14.377	34	0.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	0 4.711	1 14.541	35	0.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	0 4.875	1 14.705	36	0.098
37	0 6.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	0 5.039	1 14.868	37	0.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	0 5.203	1 15.032	38	0.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	0 5.367	1 15.196	39	0.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	0 5.530	1 15.360	40	0.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	0 5.694	1 15.524	41	0.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	0 5.858	1 15.688	42	0.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	0 6.022	1 15.851	43	0.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	0 6.186	1 16.015	44	0.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	0 6.350	1 16.179	45	0.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	0 6.513	1 16.343	46	0.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	0 6.677	1 16.507	47	0.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	0 6.841	1 16.671	48	0.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	0 7.005	1 16.834	49	0.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	0 7.169	1 16.998	50	0.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	0 7.332	1 17.162	51	0.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	0 7.496	1 17.326	52	0.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	0 7.660	1 17.490	53	0.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	0 7.824	1 17.654	54	0.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	0 7.988	1 17.817	55	0.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	0 8.152	1 17.981	56	0.153
57	0 9.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	0 8.315	1 18.145	57	0.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	0 8.479	1 18.309	58	0.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	0 8.643	1 18.473	59	0.161
Side- real.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.	

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

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TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side- real.	8 ^h .	9 ^h .	10 ^h .	11 ^h .	12 ^h .	13 ^h .	14 ^h .	15 ^h .	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	18.636	18.666	18.696	18.725	18.755	18.784	18.814	18.843	0.000
1	18.800	18.830	18.859	18.889	18.919	18.948	18.978	19.007	0.003
2	18.964	18.994	19.023	19.053	19.082	19.112	19.141	19.171	0.005
3	19.128	19.158	19.187	19.217	19.246	19.276	19.305	19.335	0.008
4	19.292	19.322	19.351	19.381	19.410	19.440	19.469	19.499	0.011
5	19.456	19.485	19.515	19.544	19.574	19.603	19.633	19.662	0.014
6	19.619	19.649	19.678	19.708	19.737	19.767	19.796	19.826	0.016
7	19.783	19.813	19.842	19.872	19.901	19.931	19.960	19.990	0.019
8	19.947	19.977	20.006	20.036	20.065	20.095	20.124	20.154	0.022
9	20.111	20.140	20.170	20.200	20.229	20.259	20.288	20.318	0.025
10	20.275	20.304	20.334	20.363	20.393	20.422	20.452	20.481	0.027
11	20.439	20.468	20.498	20.527	20.557	20.586	20.616	20.645	0.030
12	20.602	20.632	20.661	20.691	20.720	20.750	20.779	20.809	0.033
13	20.766	20.795	20.825	20.854	20.884	20.913	20.943	20.972	0.035
14	20.930	20.959	20.989	21.018	21.048	21.077	21.107	21.136	0.038
15	21.094	21.123	21.153	21.182	21.212	21.241	21.271	21.300	0.041
16	21.258	21.287	21.317	21.346	21.376	21.405	21.435	21.464	0.044
17	21.422	21.451	21.481	21.510	21.540	21.569	21.599	21.628	0.046
18	21.585	21.615	21.644	21.674	21.703	21.733	21.762	21.792	0.049
19	21.749	21.778	21.808	21.837	21.867	21.896	21.926	21.955	0.052
20	21.913	21.942	21.972	22.001	22.031	22.060	22.090	22.119	0.055
21	22.077	22.106	22.136	22.165	22.195	22.224	22.254	22.283	0.057
22	22.241	22.270	22.300	22.329	22.359	22.388	22.418	22.447	0.060
23	22.404	22.434	22.463	22.493	22.522	22.552	22.581	22.611	0.063
24	22.568	22.597	22.627	22.656	22.686	22.715	22.745	22.774	0.066
25	22.732	22.761	22.791	22.820	22.850	22.879	22.909	22.938	0.068
26	22.896	22.925	22.955	22.984	23.014	23.043	23.073	23.102	0.071
27	23.060	23.089	23.119	23.148	23.178	23.207	23.236	23.266	0.074
28	23.224	23.253	23.283	23.312	23.342	23.371	23.401	23.430	0.076
29	23.387	23.417	23.446	23.476	23.505	23.535	23.564	23.594	0.079
30	23.551	23.580	23.610	23.639	23.669	23.698	23.728	23.757	0.082
31	23.715	23.744	23.774	23.803	23.833	23.862	23.892	23.921	0.085
32	23.879	23.908	23.938	23.967	23.997	24.026	24.056	24.085	0.087
33	24.043	24.072	24.102	24.131	24.161	24.190	24.220	24.249	0.090
34	24.207	24.236	24.266	24.295	24.325	24.354	24.384	24.413	0.093
35	24.370	24.400	24.429	24.459	24.488	24.518	24.547	24.577	0.096
36	24.534	24.563	24.593	24.622	24.652	24.681	24.711	24.740	0.098
37	24.698	24.727	24.757	24.786	24.816	24.845	24.875	24.904	0.101
38	24.862	24.891	24.921	24.950	24.980	25.009	25.039	25.068	0.104
39	25.026	25.055	25.085	25.114	25.144	25.173	25.203	25.232	0.106
40	25.190	25.219	25.249	25.278	25.308	25.337	25.367	25.396	0.109
41	25.353	25.383	25.412	25.442	25.471	25.501	25.530	25.560	0.112
42	25.517	25.546	25.576	25.605	25.635	25.664	25.694	25.723	0.115
43	25.681	25.710	25.740	25.769	25.799	25.828	25.858	25.887	0.117
44	25.845	25.874	25.904	25.933	25.963	25.992	26.022	26.051	0.120
45	26.009	26.038	26.068	26.097	26.127	26.156	26.186	26.215	0.123
46	26.172	26.202	26.231	26.261	26.290	26.320	26.349	26.379	0.126
47	26.336	26.365	26.395	26.424	26.454	26.483	26.513	26.542	0.128
48	26.500	26.529	26.559	26.588	26.618	26.647	26.677	26.706	0.131
49	26.664	26.693	26.723	26.752	26.782	26.811	26.841	26.870	0.134
50	26.828	26.857	26.887	26.916	26.946	26.975	27.005	27.034	0.137
51	26.992	27.021	27.051	27.080	27.110	27.139	27.169	27.198	0.139
52	27.155	27.185	27.214	27.244	27.273	27.303	27.332	27.362	0.142
53	27.319	27.348	27.378	27.407	27.437	27.466	27.496	27.525	0.145
54	27.483	27.512	27.542	27.571	27.601	27.630	27.660	27.689	0.147
55	27.647	27.676	27.706	27.735	27.765	27.794	27.824	27.853	0.150
56	27.811	27.840	27.870	27.900	27.929	27.959	27.988	28.018	0.153
57	27.975	28.004	28.034	28.063	28.093	28.122	28.152	28.181	0.156
58	28.138	28.168	28.197	28.227	28.256	28.286	28.315	28.345	0.158
59	28.302	28.331	28.361	28.390	28.420	28.449	28.479	28.508	0.161
Side- real.	8 ^h .	9 ^h .	10 ^h .	11 ^h .	12 ^h .	13 ^h .	14 ^h .	15 ^h .	For Seconds.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.									
Side- real.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	0 0.000
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1 0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2 0.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3 0.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4 0.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5 0.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6 0.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7 0.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8 0.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9 0.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10 0.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11 0.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12 0.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13 0.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14 0.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15 0.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16 0.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17 0.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18 0.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19 0.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20 0.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21 0.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22 0.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23 0.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24 0.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25 0.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26 0.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27 0.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28 0.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29 0.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30 0.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31 0.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32 0.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33 0.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34 0.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35 0.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36 0.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37 0.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38 0.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39 0.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40 0.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41 0.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42 0.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43 0.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44 0.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45 0.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46 0.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47 0.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48 0.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49 0.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50 0.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51 0.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52 0.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53 0.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54 0.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55 0.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56 0.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57 0.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58 0.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59 0.161
Side- real.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.

TABLE III.—MEAN SOLAR INTO SIDEREAL TIME.

TO BE ADDED TO A MEAN TIME INTERVAL.										
Mean Solar.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995	0	0.000
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1	0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2	0.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3	0.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4	0.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5	0.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6	0.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7	0.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8	0.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9	0.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10	0.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11	0.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12	0.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13	0.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	14	0.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15	0.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16	0.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	17	0.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18	0.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19	0.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20	0.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21	0.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22	0.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23	0.063
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24	0.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25	0.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26	0.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27	0.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28	0.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29	0.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30	0.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31	0.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32	0.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33	0.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34	0.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35	0.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36	0.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37	0.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38	0.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39	0.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40	0.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41	0.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42	0.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43	0.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44	0.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45	0.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46	0.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47	0.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48	0.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49	0.134
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	50	0.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51	0.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52	0.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53	0.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54	0.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55	0.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56	0.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57	0.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58	0.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59	0.162
Mean Solar.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.	

